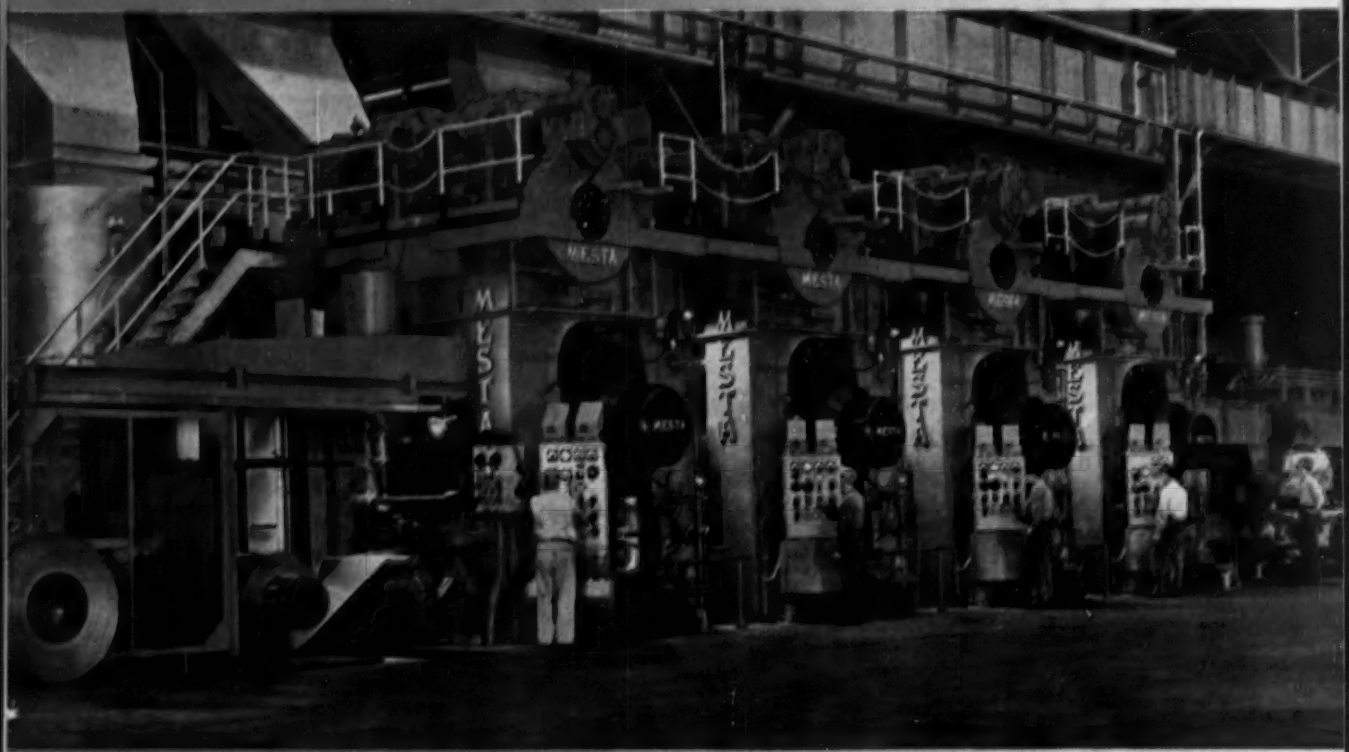
The Iron Age

A Chilton Publication

THE NATIONAL METALWORKING WEEKLY • MARCH 31, 1955

New oxygen steel process— Two mills put it to work
See page 75

HIGH-SPEED TANDEM COLD MILLS



Mesta 56" Four-High, Four-Stand Tandem Cold Mill
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MESTA MACHINE COMPANY
PITTSBURGH, PENNSYLVANIA

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4140 LEADED

These chips taken from a single point turning on a turret lathe are visible proof of the better chip formation and superior machining qualities of leaded Aristoloy.

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Under the same conditions single point turning of unleaded 4140 on a turret lathe produced these long continuous chips.

● It's a good bet you can cut machining costs by specifying leaded Aristoloy or Ledloy* in your plant. The addition of lead to steel acts as a lubricant and substantially reduces friction between chip and tool. This permits higher machining speeds and faster feeds. Tools last longer and the finished part has a finer, smoother finish. The results of our own testing and the experience of dozens of enthusiastic users also indicate that the lead addition which works this dramatic miracle in no way affects basic steel characteristics. Heat treating, tensile strength ductility, and impact strength are unchanged. Neither does the lead present a health hazard for normal forging or machining operations.

SEND FOR FREE CATALOG

If you would like specific information about application of lead steel to your product get in touch with your nearest Copperweld office or write us today.

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Mayari R makes it lighter... stronger... longer lasting

The 7 reasons why they chose Mayari R

This is an expansion dam for a highway bridge. Connecting the abutment with the bridge roadway, it allows longitudinal movement of the spans as they expand or contract with the temperature. Structural and operational factors required the steel for this device to possess an unusual combination of qualities.

Naturally, Mayari R's superior strength was important, but that was only one reason why they chose this versatile steel. The constant wear and pounding of traffic called for stout resistance to abrasion and impact, characteristics in which Mayari R handily excels plain carbon steels.

Those inter-meshing fingers were formed by flame-cutting, and some of them had to be drilled for bolt holes. Shop men found Mayari R's workability right up to par on these operations.

In addition, Mayari R proved readily weldable. The photograph shows the anchor straps as they are being welded in position, using ordinary welding equipment and methods.

With the dam in place, the underside would be virtually inaccessible, thus making maintenance painting extremely difficult. But since Mayari R has far superior resistance to atmospheric corrosion, maintenance painting at this point becomes relatively unimportant.

All of these seven Mayari R benefits, plus others unmentioned here, are fully discussed and illustrated in Catalog 353. A few minutes spent among its pages may help unlock some problem you are facing right now. Why not ask the nearest Bethlehem office for a copy?

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

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BETHLEHEM STEEL

the Iron Age

Vol. 175, No. 13, March 31, 1955

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NEWS DEVELOPMENTS

COPPER SHORTAGE HURTS AT MILL LEVEL—P. 35
Copper scarcity causes brass and wire mills to ask for export controls, relief from stockpile requirements. Big copper users face problem of delayed or unfilled orders, dangerously low inventories, premium prices and possibly higher base prices. Some users believe shortage will continue until July.

CONGRESSIONAL WORK IS BEHIND SCHEDULE—P. 37
At the halfway point, not a single major bill has been signed by the President. Reorganizing and investigations have taken up much time. Work lags behind pace set a year ago.

EAST LURES WEST EUROPE TRADE — P. 40
Using historic Leipzig Fair as backdrop, Iron Curtain countries push for trade with West Europe. Delivery promises and prices appear to be in line. Reds combine propaganda with business. Fair brings temporary prosperity to city.

PRODUCTS DIVERSIFIED THROUGH RESEARCH—P. 43
Rockwell Manufacturing Co. leans heavily on research for diversification of its product line. Sixty pct of new products in last five years came from company laboratories. This has been supplemented by acquisition of other companies. Research effort broken down into three major company categories.

REPORT FAVORS STRONG MERGER POLICY — P. 44
Government agencies recommend vigorous enforcement of antitrust laws governing mergers. Major legislative amendments to cover situation disapproved. Size of companies involved should not be the determining factor, reports say. Delivered pricing gets a kind word in committee recommendations.

IS THE ECONOMY BOOM-BOUND THIS YEAR? — P. 49
In less than a year the economy has gone from recession, to recovery, to a restrained boom. Consumer confidence has been the main force in the upsurge. And an all-stops-out boom could be in the making this year if the highway program gets the go ahead and if defense spending for the U. S. and our allies exceeds budget estimates—as seems likely.

MULTI-COLORS CREATE AUTO PROBLEMS — P. 52
Two and three tones and many color choices make new problems for production and dealers. Customer demand results in inventory headache. Some dealers do their own two-tone painting.

IN METALWORKING

ENGINEERING & PRODUCTION

STEEL PLANTS USE NEW OXYGEN PROCESS — P. 75
Oxygen steelmaking may prove one of the most significant steelmaking developments in many years. It provides for making steel with low nitrogen content and permits close control of carbon, manganese, phosphorus and sulphur. Low nitrogen in steel could yield new concepts of drawability and improve formability. Two companies, one in Canada and another in the United States, back their belief in the process with cash.

CONVERTED ROUTER TRIMS PARTS FASTER — P. 81
A standard pin router, converted for trimming contoured sheet metal parts, does the job faster, more safely, more accurately and eliminates several hand operations. Controls were added to move the cutter up and down.

MACHINING CUT BY WELDING HEAVY PARTS—P. 82
Steel forgings for heavy-duty parts can be tough on machine tools. Cast parts often reveal porosity and must be scrapped, even after expensive machining. GM uses weldments made by automatic welders to cut costs.

NEW IDEAS PACE WEST COAST ASTE SHOW—P. 84
For the first time, ASTE brought its Industrial Exposition and Conference to the West Coast where it received an enthusiastic reception. New ideas for presswork tools and methods, tooling for plastic products and quality control through realistic tolerances were among the subjects discussed. More than 270 companies exhibited the latest in machines, tools and processes.

FOUNDRY TIPS ON SHELL MOLD CASTINGS — P. 87
Accurate patterns and good pattern-making equipment are essential for good shell molded castings. Pattern-making temperatures of 450° to 500°F keep shells straight and castings accurate. Vibrating the material boxes during the investment cycle distributes resin-sand mix uniformly. Fine sand gives good finish.

MARKETS & PRICES

AUTOMOTIVE STILL NO. 1 STEEL CONSUMER—P. 38
Despite a 21 pct decline last year, auto producers held onto the role of top steel consumer. The industry took 20.52 pct of shipments. Construction-Maintenance ran a close second. All consuming industries were off. Sharpest decline was recorded by the railroads. Agriculture off only slightly.

FARM EQUIPMENT SALES ARE ON THE WAY UP—P. 39
Loosened purse strings on the farm are pushing farm equipment sales upward. Business is running 20 pct ahead of a year ago. Dealer inventories are down. Diversification contributing to upward trend. Manufacturers are buying 50 pct more steel than last year. Volume is better than pre-season estimates.

CANADA-JAPAN ORE TRADE TAKES A DIP — P. 41
British Columbia iron ore producers are witnessing an increasing drop in exports to Japan. From a 1953 peak of 923,544 gross tons shipped to Japanese mills, this year's exports may dip to 200,000 tons. Reason: (1) Japan can buy similar grades $5 a ton cheaper from Asian sources, (2) Canadian steelmen want Canadian ore smelted in Canada to meet home needs.

STEEL MARKET BUILDING UP ON SOLID GROUND—P. 127
As more industries enter the competition for steel, the market assumes an air of solid strength. What started as an automotive boom has turned into a general upswing. Scarcity thinking and protective buying are factors in the pressure on steel output but actual product needs form the main basis.

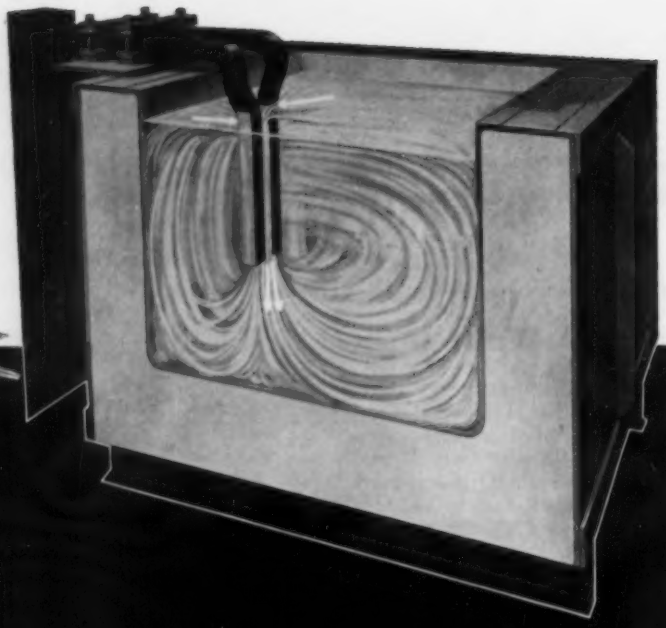
GOVT. TO RELEASE NICKEL STOCKPILE — P. 128
Decision will affect 3 million lb originally headed for stockpile. The release is aimed at easing pinch on alloy and stainless steel producers. Behind the squeeze is stepped up demand for nickel-bearing steels. Stainless sheet mills remain at capacity.

NEXT WEEK:

HOW STAINLESS STEELS RATE FOR AIRCRAFT USES
Two stainless alloys exhibit the high-temperature properties required in today's high-speed aircraft. One is a modification of AISI 420 and the other a specially developed austenitic grade. The ferritic grade, 422M, has better strength at 1000° to 1100° F. The other has excellent strength at 900° to 1300° F.

WILL VACATIONS SLOW ECONOMY AGAIN THIS YEAR?
Extended plant shutdowns were a big factor in last year's summer slump. Has the mass vacation become a permanent habit? If so, what will this mean in terms of production and buying power? Next week's story gives a report of a spot check in the Midwest and talks about the metalworking vacation picture.

Suspended-electrode type furnace



AJAX
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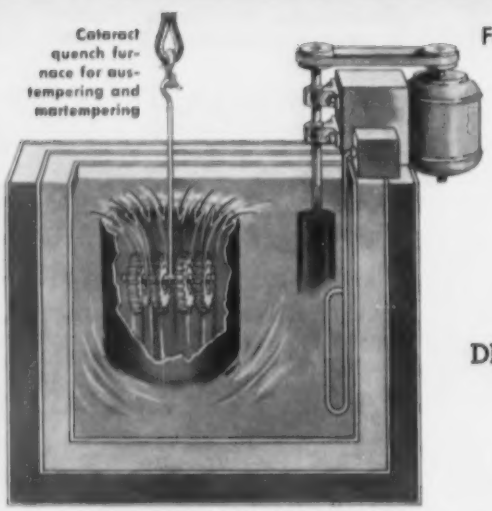
Salt Bath Furnaces

Cataract quench furnace for austempering and martempering



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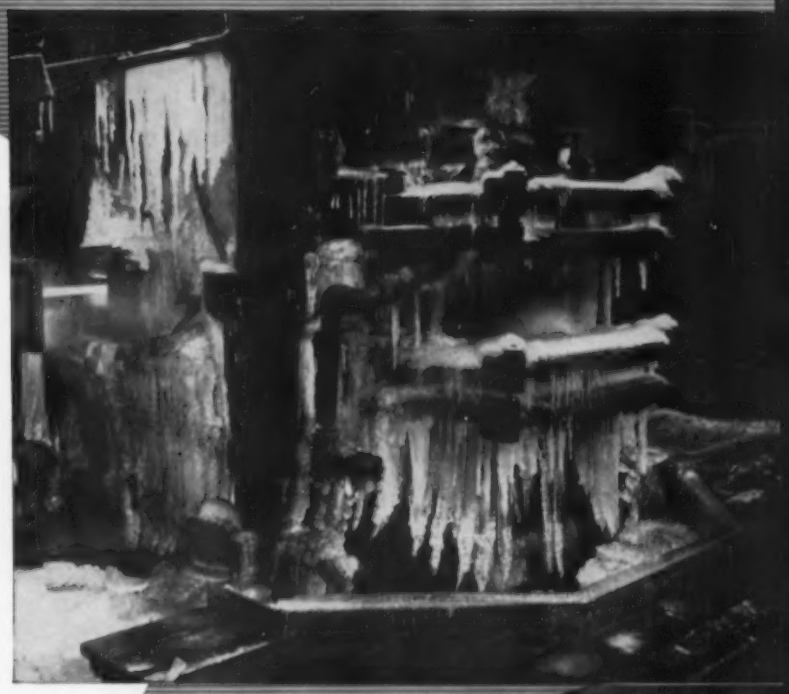
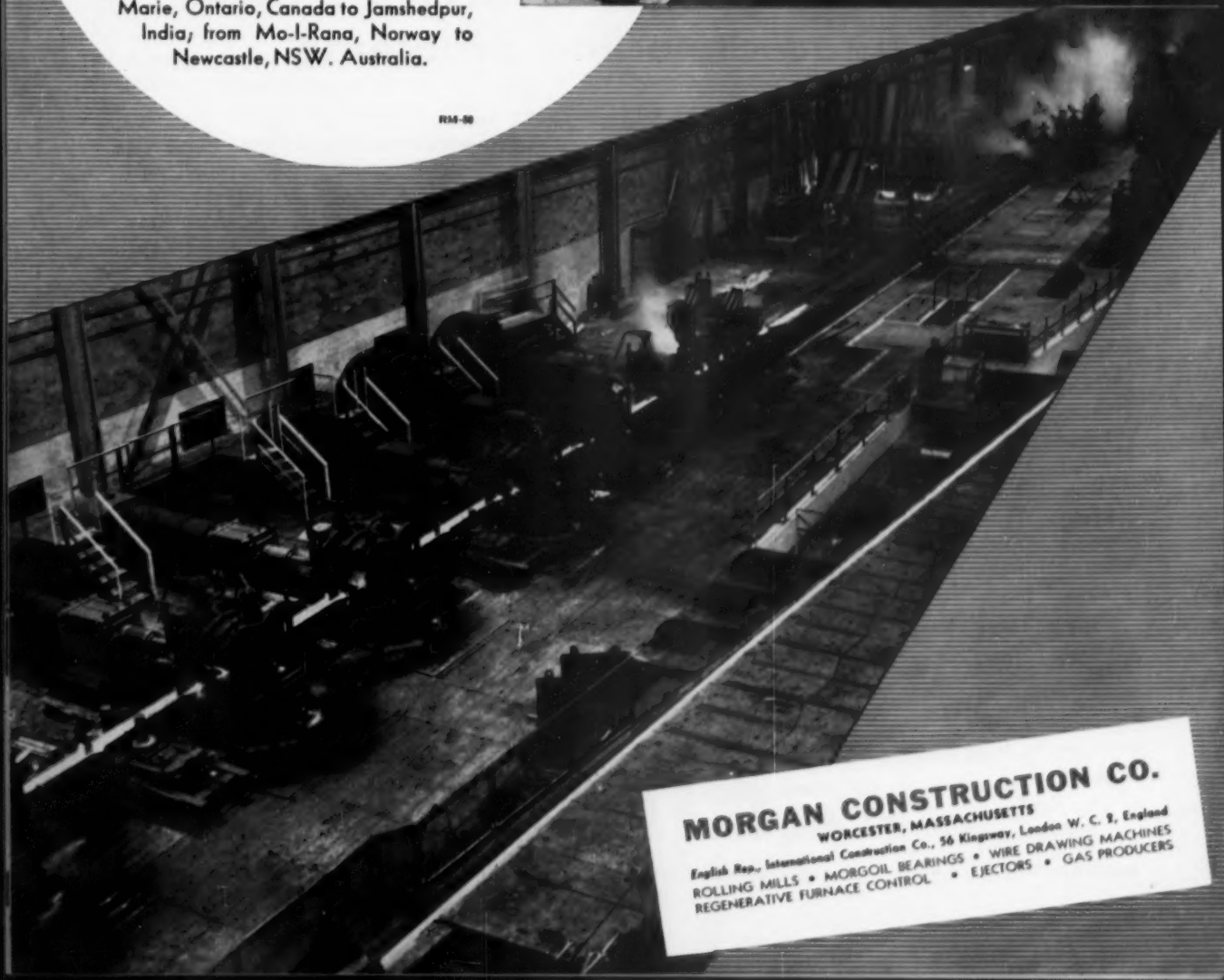
RM-88





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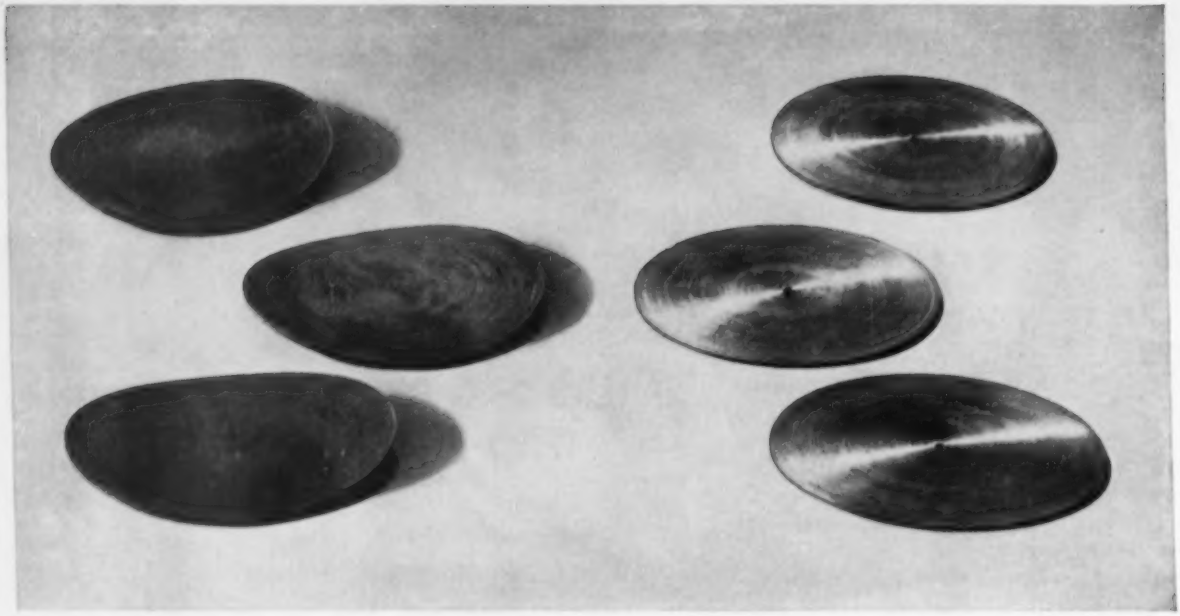

Why Armco **17-4 PH** Stainless Steel **cures distortion problems**

Here's how Armco 17-4 PH Stainless Steel and standard hardenable stainless steel reacted to heat treatment. The three samples at left are all Type 431 stainless steel; the ones at the right are Armco 17-4 PH. Both sets of discs are of the same dimensions, cut from 1¼" diameter bar stock. All have been heat treated to Rockwell C-40 to C-41.

LOW TEMPERATURE DOES IT

The Armco 17-4 PH samples have only a brown heat-tint discoloration—are perfectly flat, typical of what you may expect in your own plant. The reason is that Armco 17-4 PH is a precipitation-hardening stainless steel. The parts were fully hardened by merely holding at 900 F for 1 hour and air-cooling.

On the other hand, the Type 431 samples had to be heated to 1900 F, quenched, then stress-relieved at 600 F. They are scaled and distorted.

2 PRECIPITATION-HARDENING TYPES

If you are confronted with distortion and scaling in hardening stainless steels, Armco 17-4 PH may solve your problem. It is made in billets, bars and wire only.

For unusually high mechanical properties in sheets, strip, plates, and wire, there is a companion grade, Armco 17-7 PH. This grade takes either single or double precipitation-hardening treatment, depending on form and condition.

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For complete information on the Armco Precipitation-Hardening Stainless Steels, just fill out the coupon and mail it to us.

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EBPA NBP

Editorial:

Who Are These People?

◆ We are a people who believe in God. We also believe that the dignity of man is a God-given right not to be taken away by the state or by anyone else.

Because of these basic beliefs it is often hard for us to recognize or understand the machinations of the communist mind. But it is imperative—if we are to survive—that we know all we can about the Communist. And our government and business leaders should know how we feel about the communist question.

If it is not clearly understood how we feel about the inroads of communism, our national policies can't be as forthright as they should be. The publication of the Yalta papers should give us all the proof we need as to the character of communist words and promises.

Yet there are other basic characteristics of the communist mind that are more dangerous than breaking a word or a truce. These are at the bottom of the reasons why we can't let down our guard by being naive, too trusting, or defenseless.

The Communist will lie, cheat, steal or do anything for the Party or the cause. That applies from the lowly hanger-on to those at the top level.

The Communist owes no allegiance to God, to his family or to his country. He owes it only to the Party and will do anything that the Party commands him to do.

The top level Communists who plan wars or stumble into them care nothing about the human misery or deaths that they have caused or will cause. They look to the "glorious future."

The real Communist is a fanatic with zeal equivalent to that of the early Christians who were put to the lions by the Romans. You cannot reach him with spiritual, religious, or ethical rules and beliefs.

The Communist will give up his life if he feels that in doing so he will advance the "cause" either today or a hundred years from today.

The hard-core Communists here, in Asia, or anywhere, are collectively more dangerous than the H-bomb—unless we are prepared physically and spiritually to combat them.

Tom Campbell

EDITOR

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dear editor:

letters from readers

Austrian Steel

Sir:

In THE IRON AGE, Dec. 30, 1954, Austria was indicated in the listings of World Steel Production as being behind the Iron Curtain. While this listing was prominently displayed on p. 17, a short and inconspicuous sentence on p. 18 stated that Austria was "included in Iron Curtain totals, even though part of the country is occupied by Western Powers."

While the arrangements of figures may or may not result in a correct overall picture, it gives a completely erroneous report on the situation in Austria. Most of Austria's steel capacity has been made possible by United States ECA grants.

With the exception of a small part of one steel mill, all iron works and steel mills are physically outside of the Russian zone of occupation. But even this small part of one mill, which is within the Russian occupied zone, is entirely under Austrian administration, control and jurisdiction, and in no way under any obligation to the Russian occupation element. It produced only 5 pct of the 1954 total of Austria's steel ingot output. *A. R. Bleyleben, The Austrian Trade Delegate in the United States, New York.*

Fuel

Sir:

On p. 127 of the March 10 issue of THE IRON AGE, there is an article under "Fuel" on Westfalia centrifugal separators converting heavy oil for diesel use.

We are interested in knowing more about these separators. Please advise what company is referred to in the article. *H. L. Kenagy, Purchasing Agent, Sheffield Steel Div., Armco Steel Corp., Kansas City.*

Westfalia Separator, Inc. is the manufacturer of the centrifuge. Centrico, Inc., 75 W. Forest Ave., Englewood, N. J. is the sole U. S. distributor of the product.—Ed.

Pipe Mixup

Sir:

We were very much interested in reading the Newsfront article in the Feb. 24 issue of one of our favorite magazines, THE IRON AGE.

You mention the problem which arose in the construction of the new atomic submarine, *Nautilus*, due to a mixup in the type of pipe installed.

We thought you might be interested in our answer to this problem. . . . The positive identification feature of our Red Band seamless product is very helpful to our distributors and their customers to make sure that seamless material is actually being installed where specified. *W. D. Reed, President, Star Tubular Products Co., Chicago.*

Unloading Coupling

Sir:

We are interested in receiving all the available data concerning the tank car unloading coupling discussed in the article, "Unloading: Empty cars tractor," p. 132 of the Feb. 3 issue.

Please forward this information at your earliest convenience. *L. L. Hedrick, Works Purchasing Dept., Carbide & Carbon Chemicals Co., South Charleston, W. Va.*

Further information on the improved coupling may be obtained from Titeflex, Inc., Hendee St., Springfield, Mass.—Ed.

SPEED FORMING
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It helps the Fireman save that child

BURNING problem for engineers of a large, fire-fighting-equipment manufacturer was the compact V-belt drive on their high-pressure, water-pumping units. Standard belts sometimes failed at the height of the first fire they fought.

Since failure at a fire couldn't be risked, the G.T.M. — Goodyear Technical Man — was consulted. He specified matched sets of COMPASS-V-Steel Belts, sinewed with airplane-type steel cables to handle the heavy loads without a slip. And they do.

Firemen report these precision-built belts operate two to three years *without a single take-up*. Perhaps they can do the same for you. Find out by seeing the G.T.M., your Goodyear Distributor or writing Goodyear, Industrial Products Division, Akron 16, Ohio or Lincoln, Nebraska.

YOUR GOODYEAR DISTRIBUTOR *can quickly supply you with Hose, Flat Belts, V-Belts, Packing or Rolls. Look for him in the yellow pages of your Telephone Directory under "Rubber Products" or "Rubber Goods."*

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GOODYEAR

THE GREATEST NAME IN RUBBER

fatigue cracks

by William M. Coffey

Again, Again and Again

We tell you, we tell you and we tell you. For years we tell you to watch IRON AGE forecasts and predictions. And we tell you again and again and again and again (that's going one better, isn't it?) And we tell you today, too, again.

Happened to be browsing through *Time* magazine, issue of Feb. 28, and ran across this item "*. . . blast furnaces glowed and roared in the steel centers of Pittsburgh, Youngstown and Chicago last week as the steel industry jacked its operating rate to 88.2% . . . with order backlogs soaring, the trade magazine Iron Age said: If the rate of incoming business holds, raw steel output may reach 94% to 95% capacity in March or early April.*" (*Time* was reading our issue of Feb. 10).

So what happened? Last week's issue (IRON AGE) reported the market at 94.5% capacity. Right on target.

We might add that last Fall we didn't ride along with the general pessimism, even were conservatively considered to be off our rocker when Tom Campbell's editorial for November 11 predicted an average for 1955 of 85%. A couple of more months over 90% and this will be another IRON AGE forecast come true. Keep sending the money.

The Key Men (cont.)

Being men of our words (the editorial "we" is sometimes a little awkward. It gives the impression that somebody helps me with this column and much to *our* regret that ain't true because then *we* could blame it all on them), here are some more of the key men who turn out airplanes for Chance Vought. Reprinted without permission from the Chance Vought Calendar for 1955.

The Master Planner—As children, Master Planners spend their leisure on jigsaw puzzles. As adults they do the same thing, contorting men, machinery, and government requirements into neatly interlocking pieces in a four-dimensional puzzle. It is rumored that a Master Planner once slew an innocent musician because he wrote a melody entitled "Time On My Hands." Born and reared in metronomes, they spend their leisure time repairing clocks and studying the classic uses of Procrustean beds.

The Draftsman—If your child doodles and uses up all your blueprint paper, beware of him for he may become a Draftsman. Manufacturers of paper and pencils admire this interesting specimen whose ambition is to draw the most out of life. Engineers work from dawn to dusk to feed these little creatures who love Intricate Details and frequently leave the office to chew on Changes.

Puzzlers

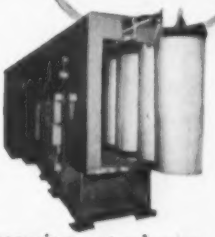
The answer to Mr. Henry Hall's triangular puzzler (Feb. 24) is: the sides of the triangle are 2.635, 2.151 and 1.092. The angles, 70°, 30°, and 80°. The winners: Mr. C. W. McKinley (who before the year is out will get the cigar), the apprentice training class of Bell & Gossett—Fred Rickert, Dick Holappa, Ronald Leaf, Ed Roslof, and Mark Weiss (only two decimals count), "G.S.C.C. Experts Anonymous," Walter L. Jenkins, Rodney Johanson, Albert Donnelly, William R. Cook, Lewis Fuller, Ann Gilboy, Alfred Eiseman, Fred A. Nicholson, Charles T. Lowell, Winston Langford, B. M. Rodman, Paul E. Lange, Joseph Knapp, Otto Kienbusch, Howard Lasser and Jean Lambert. A real jack-pot.

New Puzzler

What three digit number multiplied by twenty equals the square root of its cube?

What you should know about Phosphate Coating

metalwash PHOSPHATIZING MACHINES



Preparing water heater shells for enameling

metalwash PHOSPHATIZING MACHINES

Preparing fluorescent light fixtures for enameling

metalwash PHOSPHATIZING MACHINES

Preparing truck parts for painting

Metalwash Machinery Corporation

920 North Ave., Elizabeth 4, N. J.

Please send me free booklet:

"PHOSPHATE COATING COMES OF AGE"

A review of the types of phosphate coating specified by industry for metal surfaces

NAME.....

FIRM.....

ADDRESS.....

CITY.....ZONE....STATE.....

Cincinnati Bickford MEETS ALL REQUIREMENTS AT Canadian Pratt & Whitney Aircraft Company LIMITED

Drilling, Core Drilling and Reaming Alloy Steel Cheek and Counterweights of Aircraft Engine Crankshafts. Reamed holes are held accurate within .0005". Second machine is boring and facing Inlet and Exhaust Ports on Cast Aluminum Cylinder Heads.

Six Cincinnati Bickford 9" column Super Service Radial Drills have given a fine performance and established a record for accuracy and reliability, and have met production problems at Canadian Pratt & Whitney Aircraft Co., Ltd. Modern Cincinnati Bickford features for convenient easy handling, power and speed have made these machines highly profitable. Investigate these money makers.

Write for Bulletin R 21C.

Photos courtesy of Canadian Pratt & Whitney Aircraft Co., Ltd., Montreal, Canada.

Drilling, Counterboring, Reaming and Tapping 1¾" Hole in Aluminum Crankcase Forging Section to a tolerance of ±.001".

80 YEARS OF SERVICE

CINCINNATI BICKFORD

RADIAL AND UPRIGHT DRILLING MACHINES

THE CINCINNATI BICKFORD TOOL CO.

Cincinnati 9, Ohio, U.S.A.

dates to remember

APRIL

NATIONAL FLUID POWER ASSN.—Annual spring meeting, Apr. 4-6, The Broadmoor Hotel, Colorado Springs, Colo. Association headquarters are at 1618 Orrington Ave., Evanston, Ill.

AMERICAN HARDWARE MANUFACTURERS ASSN.—Spring meeting, Apr. 10-14, Palm Beach, Fla. Association headquarters are at 342 Madison Ave., New York.

WIRE REINFORCEMENT INSTITUTE, INC. — Spring meeting, Apr. 11-13, The Greenbrier Hotel, White Sulphur Springs, W. Va. Institute headquarters are at National Press Bldg., Washington, D. C.

EXPOSITIONS

AMERICAN MANAGEMENT ASSN. — National packaging exposition and conference. Apr. 18-21, International Amphitheatre, Chicago. Association headquarters are at 330 W. 42nd St., New York.

NATIONAL MATERIALS HANDLING EXPOSITION — May 16-20, International Amphitheatre, Chicago. Management: Clapp & Poliak, Inc., 341 Madison Ave., New York.

NATIONAL ASSN. OF PURCHASING AGENTS—Annual convention and inform-A-Show, May 29-June 1, Waldorf-Astoria Hotel, New York. Association headquarters are at 11 Park Place, New York.

CONCRETE REINFORCING STEEL INSTITUTE—Annual meeting, Apr. 11-16, The Greenbrier Hotel, White Sulphur Springs, W. Va. Institute headquarters are at 38 S. Dearborn St., Chicago.

AMERICAN SOCIETY OF LUBRICATION ENGINEERS — Annual meeting and exhibit, Apr. 13-15, Sherman Hotel, Chicago. Society headquarters are at 84 E. Randolph St., Chicago.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS — Organization anniversary meeting, Apr. 16, Hoboken, N. J. Society headquarters are at 29 W. 39th St., New York.

PACKAGING MACHINERY MANUFACTURERS INSTITUTE — Semi-annual meeting, Apr. 16-17, Palmer House, Chicago. Institute headquarters are at 342 Madison Ave., New York.

SCIENTIFIC APPARATUS MAKERS ASSN. — Annual meeting, Apr. 17-21, The Greenbrier Hotel, White Sulphur Springs, W. Va. Association headquarters are at 20 N. Wacker Drive, Chicago.

AMERICAN INSTITUTE OF STEEL CONSTRUCTION—Annual national engineering conference, Apr. 18-19, Muehlebach Hotel, Kansas City. Institute headquarters are at 101 Park Ave., New York.

BLAST FURNACE, COKE OVEN & RAW MATERIALS COMMITTEE & NATIONAL OPENHEARTH STEEL COMMITTEE, American Institute of Mining & Metallurgical Engineers — Annual conference, Apr. 18-20, Bellevue-Stratford Hotel, Philadelphia. Institute headquarters are at 29 W. 39th St., New York.

SOCIETY OF AUTOMOTIVE ENGINEERS, INC. — Golden Anniversary meeting, Apr. 18-20, Hotel Statler, New York. Society headquarters are at 29 W. 39th St., New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS — Diamond Jubilee spring meeting, Apr. 18-22, Lord Baltimore and Southern Hotels, Baltimore. Society headquarters are at 29 W. 39th St., New York.

BRAND-NEW FIRE KILLER!

"WOW- trigger release for fast action!"
"HEY- pistol grip for easy handling!"
"SEE- new dust and moisture-proof gauge shows pressure at a glance!"
"BOY- powder won't pack, can't clog extinguisher!"
"LOOK- diffuser horn gives wider coverage in any position!"
"SAY- has reinforced bottom, won't topple over!"
Kidde

Leave it to Kidde to come up with a red-hot idea like this — a big, new 10-pound dry chemical extinguisher that's effective at *any* pressure from 150 to 250 pounds!

Naturally, this new Kidde 10-pounder has all the special features that make the Kidde Dry Chemical line second to none — fast action, easy handling, simple trigger operation, and extra-wide coverage that snuffs out fire in seconds. But the "wide operating range" feature is what makes the 10-pounder a real standout!

Unlike other extinguishers, which usually operate at one pressure only, the Kidde 10-pounder works through an extremely wide pressure range. Even when charged as low as 150 pounds, the Kidde 10-pounder is UL-approved for Class B and C fires. Boost the charge to *250* pounds, and you have a fire extinguisher with an *extra* hard-hitting punch!

For fighting fires in deep-burning liquids, electrical machinery and other hard-to-get-at places, *nothing* beats a Kidde Dry Chemical Extinguisher. Good for fires in textiles, too! See to it that *you* have Kidde protection. Call Kidde today!

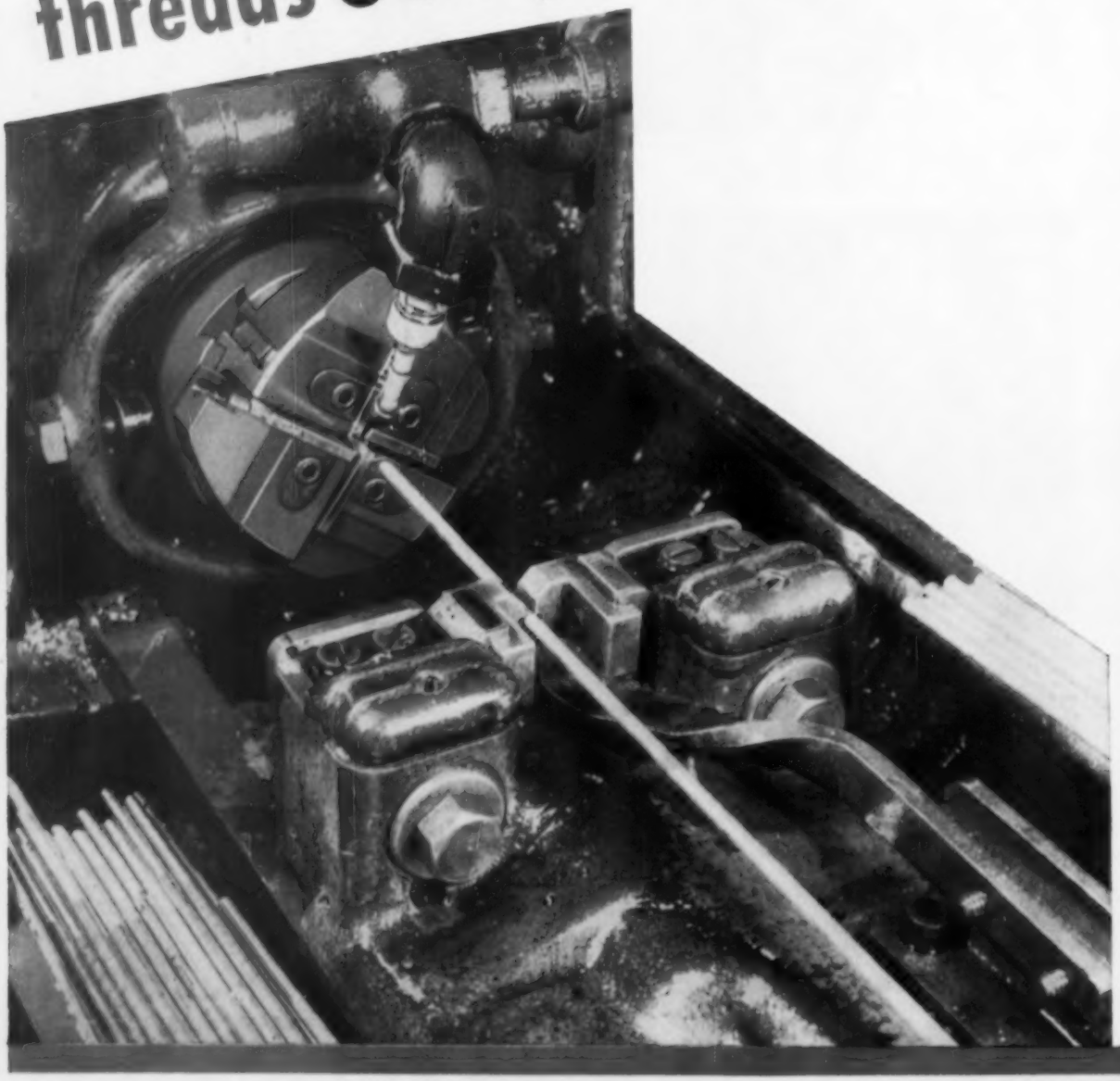
Kidde (K Kidde)

Walter Kidde & Company, Inc.
350 Main Street, Belleville 9, N. J.
Walter Kidde & Company of Canada, Ltd., Montreal—Toronto

The words 'Kidde', 'Lux', 'Lux-O-Matic', 'Fyre-Freez' and the Kidde seal are trademarks of Walter Kidde & Company, Inc.

3/8" Machine

threads 500 pieces per hour



THE WORLD'S LARGEST MANUFACTURERS OF THREADING EQUIPMENT

A LANDIS ⅜" Threading Machine has increased the output of threaded automobile seat lock rods by 25%.

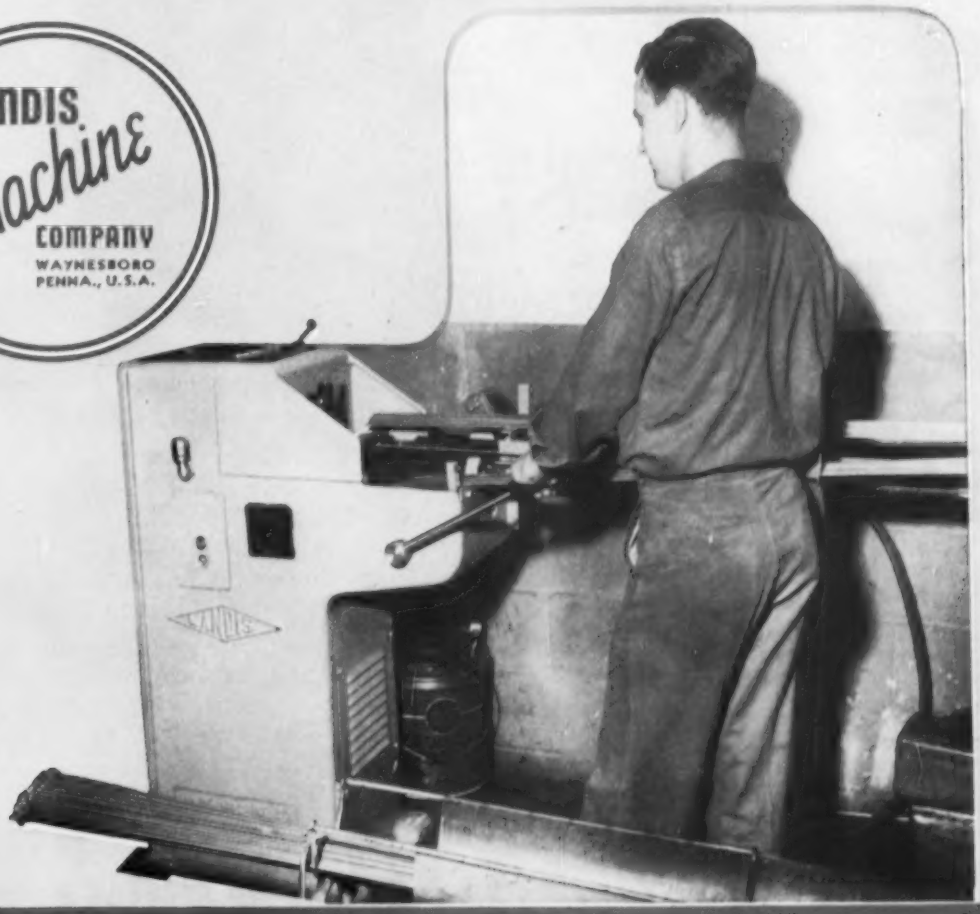
#10 24-pitch UN threads are cut 1¾" long on 54" galvanized wire rods. Production now averages about 500 pieces per hour, with 4,500 pieces threaded between grinds of the chasers. With excellent production between chaser grinds, low tool cost and minimum downtime are assured through the use of long-life LANDIS Tangential Chasers which can be reground for 80% of their original length.

These savings are being realized at Mid-West Wire Products in Detroit, Michigan. Best previous threading methods never produced more than 400 pieces per hour, and completed only 2,500 pieces before requiring the chasers to be reground.

The ⅜" Machine is a small high-speed machine for threading small parts (3/16" to ½" in diameter) to precision tolerances. This machine has been designed so that it can be operated with only one hand, freeing the other hand for loading and unloading the workpiece. The opening and closing of the grips is automatically controlled by the carriage operating lever, and the die head automatically opens on completion of the thread and closes during the carriage return.

Analyze the threading operations in your plant today for the possibility of a similar production saving. Then send us the specifications of the workpiece involved, and ask for Bulletin H-91 for more detailed information about the LANDIS ⅜" High Speed Threading Machine.

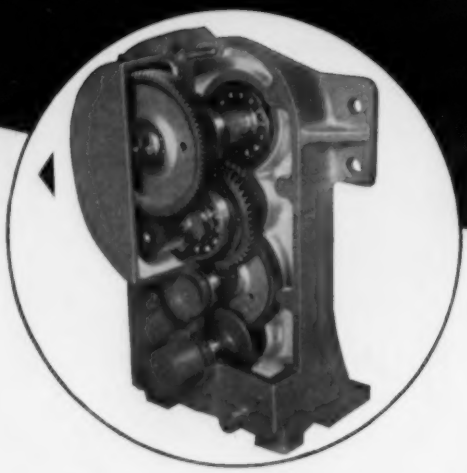
LANDIS Machine COMPANY
WAYNESBORO
PENNA., U.S.A.



282-2-C

CUTTING - TAPPING - GRINDING - ROLLING

NEW... AMERICAN MONOTRACTOR for Automatic Handling



The NEW American MonoTractor will fit precisely into any overhead handling system for automatic transfer of materials.

This new unit offers these advantages:—

1. Duti-Rated Life Time Gearing.
2. Speed Range from 35 to 350 F. P. M.
3. Horsepower Range for ¼ to 2 H.P.
4. Any Standard NEMA Motor.
5. Any Type Motor Brake Can Be Applied.
6. Operates on Any Smooth Flat Flange Track.

This precision built tractor unit offers continuous trouble-free transfer of any type of carrier for power propulsion. American MonoRail engineers offer wide experience in the application of these units. Let them help you solve your automatic handling problems.

AMERICAN OVERHEAD HANDLING EQUIPMENT

AMERICAN MONORAIL COMPANY

13103 ATHENS AVENUE • CLEVELAND 7, OHIO

[IN CANADA—CANADIAN MONORAIL CO., LTD., GALT, ONT.]

brass portal

to strength and machinability

Products made of brass—like this door knocker—convey a feeling of solid strength . . . the strength of a Titan. Brass has a profound and warm authority that is always in fashion regardless if the product be a forged door knocker or a shiny screw machine part.

For the metal fabricator, the strength of Titan brass also means beauty that lasts, durability against abrasion and wear, and corrosion resistance. Couple these qualities with the high-speed low-cost machinability of Titan brass, and you have a world of advantages offered by brass. Free-cutting brass rod, for example, is the most easily machined of all metals.

To get the most in metals, call your nearest Titan Office, Distributor or Depot. And send for free booklet "Brass Means Business" describing 1) Titan products and 2) the first full-color, sound motion picture on brass manufacture and uses. It's yours free!

Dept. B
Titan Metal Mfg. Co., Bellefonte, Pa.
Gentlemen: Please send free booklet titled "Brass Means Business".

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Title_____

Company_____

Street_____

City & State_____

Titan

METAL MANUFACTURING COMPANY

Bellefonte, Pa. Offices and Agencies in Principal Cities

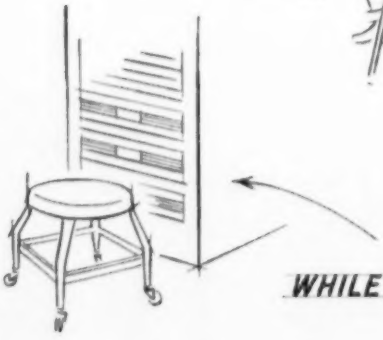
RODS · FORGINGS · DIE CASTINGS · WELDING RODS · WIRE

Quality Alloys by Brass Specialists

USE STANDARD HALLOWELL STOOLS AND CHAIRS IN PLANT MODERNIZATION

MODEL 206 - ROUNDED SEAT WITH CLAMP-TYPE BACK

IN THE TOOLROOM



WHILE FILING

AT DRAFTING BOARDS

DESKS

OR WORK BENCHES

MODEL 230
ROUNDED SEAT
WITHOUT BACK
4" HEIGHT ADJUSTMENTS
IN 1" INCREMENTS

MODEL 250
SHAPED PLYWOOD SEAT
POSTURE BACK

VARIOUS HEIGHTS, FIXED AND ADJUSTABLE
SEVERAL SEAT MATERIALS -- ALL STANDARD

Standard Units · Standard Accessories · Welded Steel Construction · Stocked by Leading Shop Equipment Dealers · Send for "Stoolcraft" – a Humorous Booklet on Where You Can Use Hallowell Stools and Chairs. Hallowell Shop Equipment Division, Standard Pressed Steel Co., Jenkintown 17, Pa.

HALLOWELL SHOP EQUIPMENT DIVISION

SPS

JENKINTOWN PENNSYLVANIA

BENCHES (CABINET, WORK, UNIT) • STOOLS AND CHAIRS • SHOP DESKS • TOOL STANDS AND CABINETS • DRAWERS, DRAWER TIERS • STEEL CARTS • SHELVING

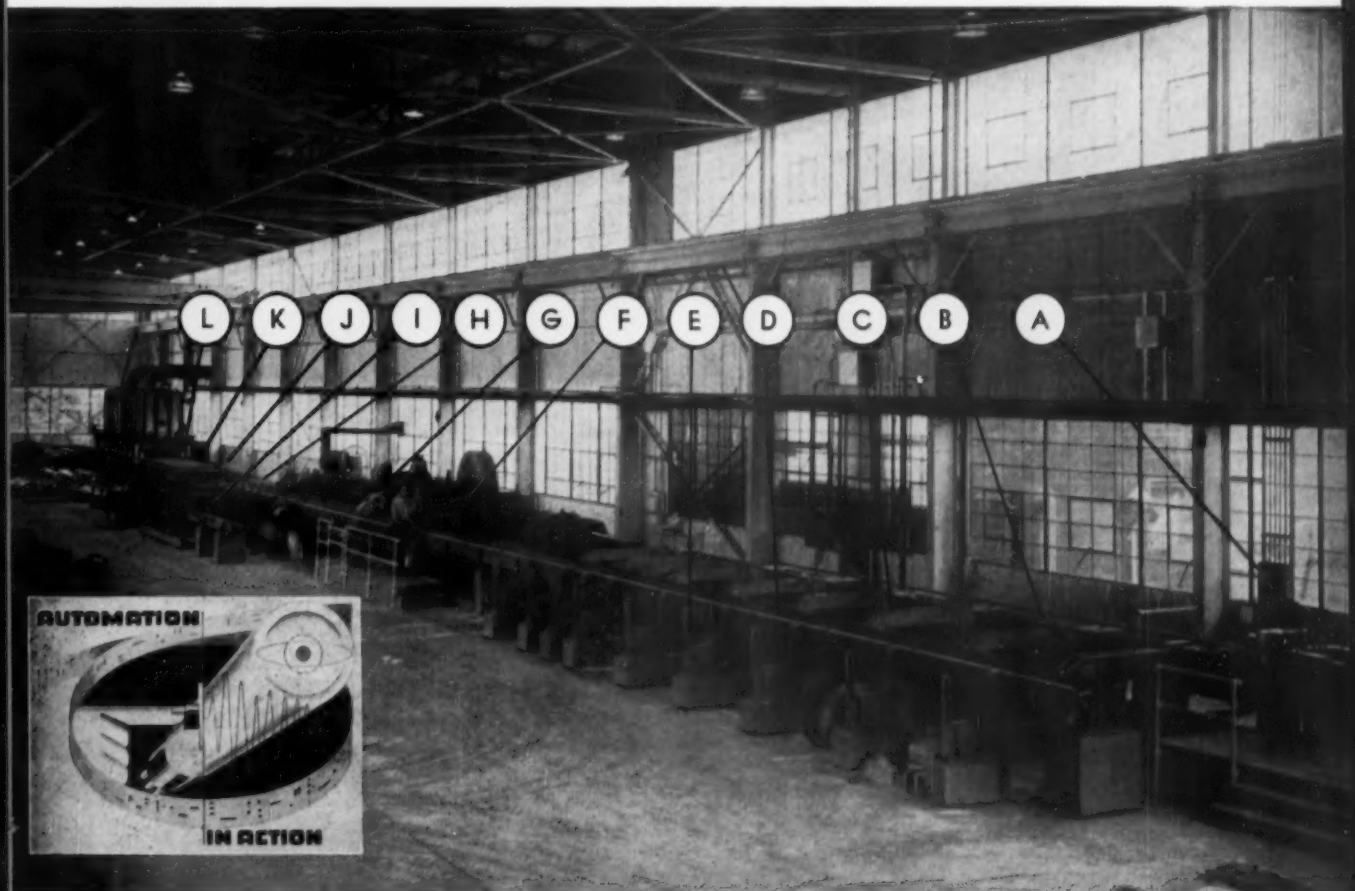
Here's the Fastest, Most Efficient Cold Draw Processing Line Available

The McKay Automated Line that automatically handles and processes hot rolled bars through cold drawing, shearing and straightening in a continuous cycle has proved itself to be far and away the fastest, most efficient cold draw processing operation in action today. Users are finding they can effect great labor savings while actually boosting production, and at the same time get a more uniform product.

Hot rolled, pickled bars are push pointed, drawn, sheared to length, and straightened in a single, continuous operation with no intermediate handling of any type. Hold down and crop gauging on a multiple shear, plus automatic length gauging, permits the shearing operation to keep pace with the maximum drawing cycle. Sheared bars are automatically entered into the straightener which operates at speeds high enough to enable a continuous straight-line flow of bars.

Does the line pay off? Three of four companies now using these lines say they have already paid for themselves and are contemplating the purchase of additional units.

CAN YOU AFFORD TO OPERATE WITHOUT SUCH COST SAVING EQUIPMENT? Remember handling adds nothing to the value of your product. Why not look over the McKay line of automated processing-handling equipment? Why not talk it over with a McKay engineer? There's no obligation.



A—**Hydraulic Push Pointer** Eliminates pointing prior to drawing. Minimizes point scrap.

B—**Multiple Bar Draw Bench** One, two or three bars at a time.

C—**Horizontal Pneumatic Transfer Arms** Takes drawn bars from bench and deposits them on driven shear entry table.

D—**Shear Entry Table** Conveys drawn bars to the shear.

E—**Auxiliary Racks**

F—**Multiple Bar Shear** Has capacity to shear same number and sizes of bars that are drawn.

G—**Cut-to-Length Gauge Table** Automatic cut-to-length and crop gauges.

H—**Shear Run-out Table** Driven table conveys sheared bars to straightener entry table.

I—**Transfer Skids** Entry to straightener table.

J—**Automatic Straightener Entry Table** Completely automatic feed from transfer skids into straightener.

K—**Straightener**

L—**Straightener Exit Table and Racks**

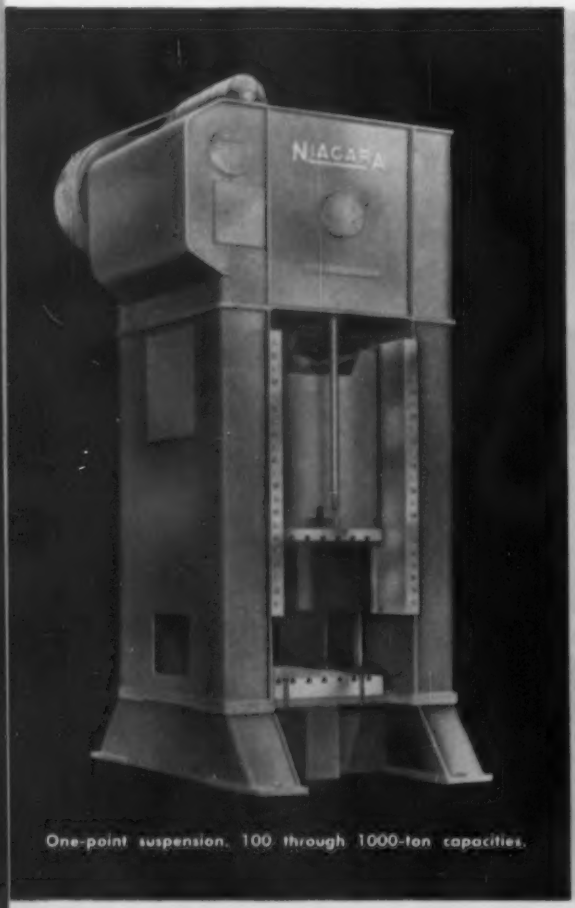
The McKAY MACHINE Company
YOUNGSTOWN, OHIO

McK

ENGINEERS AND DESIGNERS OF EQUIPMENT FOR THE AUTOMOTIVE, FABRICATING AND STEEL INDUSTRIES

NEW! MASTERFULLY ENGINEERED

excels in large, heavy tonnage



One-point suspension. 100 through 1000-ton capacities.

Four-point suspension. 200 through 1000-ton capacities.

ECCENTRIC DRIVE DELIVERS GREATER TORQUE WITH LESS DEFLECTION

In Niagara Series SE Presses, the eccentric is an integral part of the main gear (or gears) which rotates on a stationary pin rigidly supported in the crown, close to the point at which the pressure is exerted. Serving merely as a pivot, the pin carries no torsional load and relatively little bending load. Net result: Niagara's eccentric gear design can deliver greater torque with less deflection than other types of construction.

RUGGED, RIGID, ALL-STEEL FRAMES PROVIDE GREATER ACCURACY, LONGER DIE LIFE

Frames are rugged, all-steel, four-piece, tie-rod construction of great strength and rigidity, stress relieved in a furnace and thoroughly grit-blasted before machining. Each frame size has been scientifically tested for deflection to meet Niagara standards — the most exacting in the industry.

LOW INERTIA, PNEUMATIC FRICTION CLUTCH RUNS COOLER, WEARS LONGER

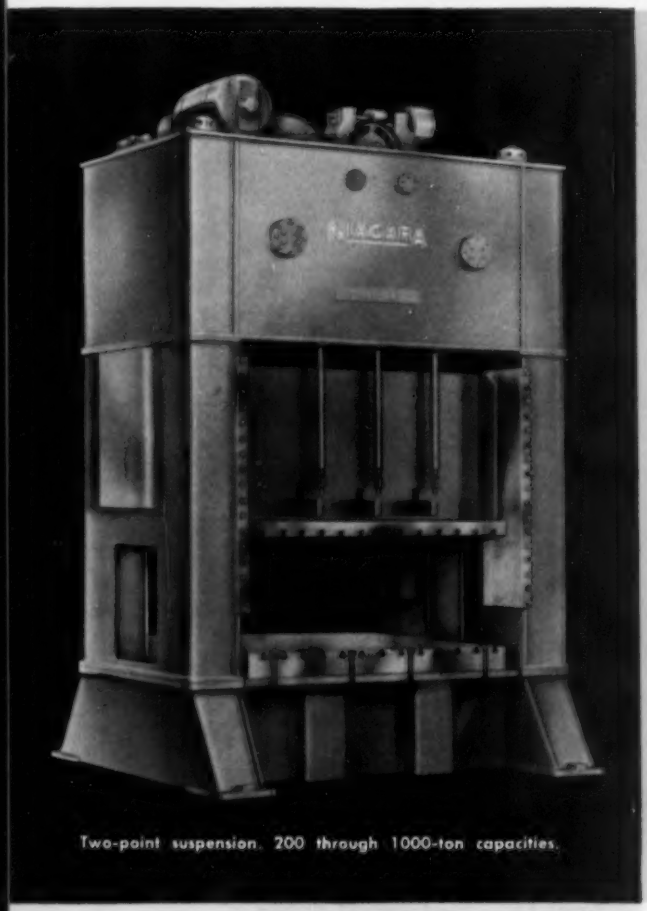
Most of the weight of the Niagara clutch continues to rotate with the flywheel. Only the drive shaft and driving plate start and stop with each cycle. The resulting low weight and inertia of the parts, picked up during clutch engagement, greatly reduce heat and wear. As the clutch rotates, it acts as a centrifugal blower, providing positive ventilation. Plates automatically compensate for normal wear, with no adjustment necessary.

MODERN, STREAMLINED DESIGN EMPHASIZES COMPACTNESS

The entire driving assembly is neatly housed in the crown. There is no exposed, overhanging flywheel, clutch, brake, shaft nor motor in the rear of the press to obstruct crane service, block light, throw grease or consume space unnecessarily.

LINE OF METALWORKING CHAMPIONS

drawing, punching and blanking work



Two-point suspension. 200 through 1000-ton capacities.

Without equal in engineering design, performance and stamina, this great new line of Niagara Straight Side Eccentric Geared Presses is every inch a champion. It is an outstanding example of the advanced thinking that has made Niagara the pace-setter among builders of metal working machines for 75 years.

Masterfully engineered and ruggedly constructed to handle a tremendous variety of work, the new Niagara SE Series is the most practical and dependable press line built for:

- Work requiring large die areas.
- Heavy tonnage demands.
- Long stroke, deep drawing jobs where work is engaged high up on the stroke.
- Bottom-of-stroke blanking and punching.

THE COMPLETE STORY IS READY FOR YOU NOW!
Make a feature-by-feature appraisal of what these great new presses can do for you. Write for newly published, illustrated Bulletin 66. It will be forwarded promptly without obligation.

NIAGARA MACHINE & TOOL WORKS • BUFFALO, 11, N.Y.
DISTRICT OFFICES: DETROIT • CLEVELAND • NEW YORK • PHILADELPHIA
Dealers in principal U. S. cities and major foreign countries.

DELUXE OPERATING CONTROLS INSURE UTMOST SAFETY, EFFICIENCY AND CONVENIENCE

Compactly and conveniently arranged on a master panel, Niagara controls are instantly accessible for fingertip direction of every press operation: starting, slide adjusting, jogging, die tryouts, running and stopping. The latest safety devices provide maximum protection for die setter, operator and the press itself. Nothing has been overlooked. Trial runs assure that all controls are in proper working order before each Niagara press leaves the plant.

NIAGARA

STRAIGHT SIDE
ECCENTRIC GEARED
PRESSES

America's Most Complete Line of Presses, Shears, Machines and Tools for Plate and Sheet Metal Work

Almost everything that turns at

GREAT LAKES TURNS ON HYATTS!

At the big Ecorse plant of Great Lakes Steel, Detroit division of National Steel Corporation, you'll find HYATT Roller Bearings on the strip mill, the slabbing mill, both blooming mills.

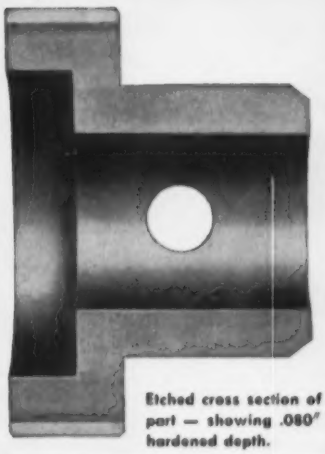
You'll find HYATTS on cranes—mill motors—ingot cars—charging cars.

To keep a steady supply rolling to Detroit's steel-hungry auto assembly lines and many other customers, one of America's foremost steel producers depends on HYATTS. Great Lakes can't afford to depend on anything but the *best* in roller bearings. *Can you?* Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.

HYATT ROLLER BEARINGS

STRAIGHT BARREL TAPER

COSTS CUT 94%



Etched cross section of part — showing .080" hardened depth.

with TOCCO* Induction Heating

A cost reduction of 94% resulted when heat-treatment of this Corn Harvester part was changed from carburizing to TOCCO-hardening. Look at the unit cost breakdown:

CARBURIZING		TOCCO-*Hardening*	
Degrease	$0.0020	*eliminated*	
Carburize	0.0200	*eliminated*	
1st quench	0.0150	TOCCO, heat and quench	$0.0060
2nd quench	0.0150	*eliminated*	
Draw	0.0050	*eliminated (self-draw)*	
Shotblast	0.0035	*eliminated*	
Internal Grind	0.0243	*eliminated*	
External Grind	0.0166	*eliminated*	
	$0.1014		$0.0060

"—Savings of 9½ cents per piece—$4770.00 on each 50,000 piece batch, *plus* an hourly production increase from 120 to 300 pieces per hour, *plus* improved quality of the product by virtue of the deeper case and stronger core."

Have you investigated TOCCO's cost-savings possibilities for your hardening, brazing, melting or forging operations? Why not write us today or send blueprints of your parts —no obligation, of course.

THE OHIO CRANKSHAFT COMPANY

TOCCO

*Trade Mark Reg. U.S. Pat. Off.

Mail Coupon Today

NEW **FREE** BULLETIN

THE OHIO CRANKSHAFT CO.
Dept. A-3, Cleveland 1, Ohio

Please send copy of "TOCCO Induction Heating."

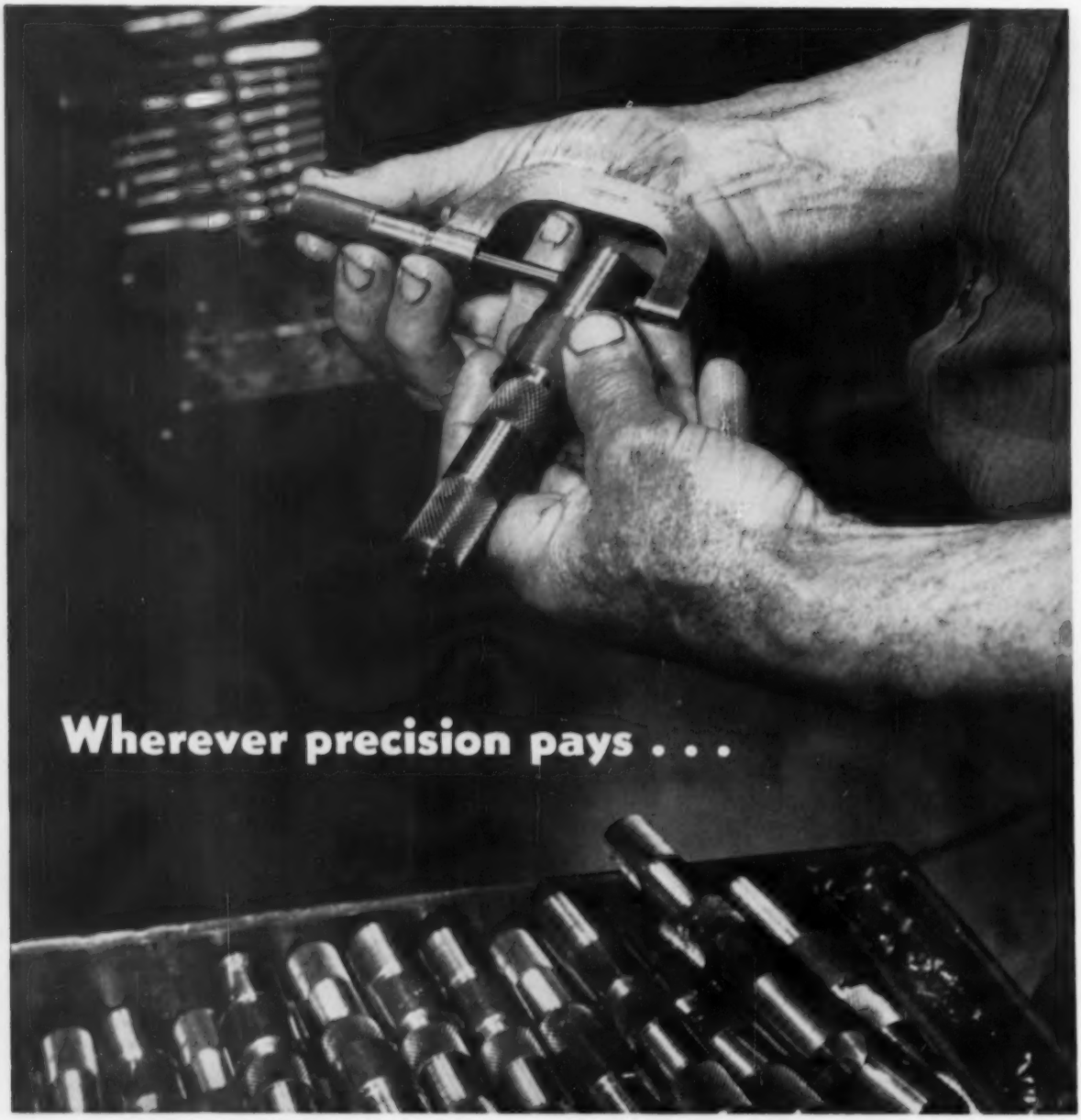
Name_____

Position_____

Company_____

Address_____

City_____ Zone____ State_____



SPECIFY

Youngstown

COLD FINISHED CARBON AND QUALITY YOUNGSTOWN SERVICE ALLOY STEEL BARS

●"Free machining" means a steel that is uniform in its cutting characteristics, uniform in its composition and grain size, uniform in its freedom from defects and injurious imperfections.

Youngstown Cold Finished Carbon Yolead and Alloy Steel Bars have that desirable uniformity because of a close quality control that carries through from ore mine to the shipping platform.

THE YOUNGSTOWN SHEET AND TUBE COMPANY *Manufacturers of Carbon, Alloy and Yoloy Steel*

General Offices: Youngstown, Ohio - Export Office: 500 Fifth Avenue, New York 36, N. Y.

SHEETS - STRIP - PLATES - STANDARD PIPE - LINE PIPE - OIL COUNTRY TUBULAR GOODS - CONDUIT AND EMT - MECHANICAL TUBING - COLD FINISHED BARS - HOT ROLLED BARS - BAR SHAPES - WIRE - HOT ROLLED RODS - COKE TIN PLATE - ELECTROLYTIC TIN PLATE - RAILROAD TRACK SPIKES

Question Mark
POLYGONIA INTERROGATIONIS

Attractive

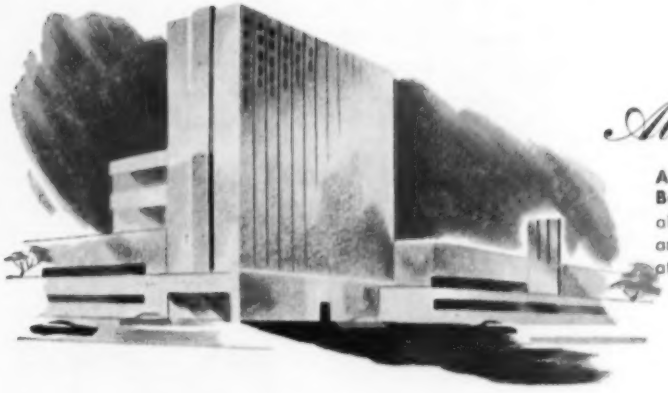
In the world of nature there are few creatures which match the butterfly in range of color and ability to add beauty to any outdoor scene.

The forest-dwelling Question Mark, which derives its name from curved color markings under its wings, is found throughout the eastern areas of North America from Canada to Mexico. It is eagerly sought by collectors for its beauty and perfection.

In the world of materials there are few metals which match aluminum for its ability to harmonize readily with indoor or outdoor settings. Aluminum in its natural state possesses a pleasing silver-grey sheen and a high reflectivity. A variety of interesting decorative effects may be produced on aluminum by finishing processes similar to those used on other metals.

Some of the special finishing processes also furnish protection against corrosion, improve the surface reflectivity, and increase aluminum's resistance to abrasion.

Aluminium Limited Sales, Inc. is the distributor in the United States for aluminum from Canada. Why not investigate making your products of aluminum?



Attractive

Aluminum for Commercial, Industrial and Residential Buildings. The decorative value and practical function of aluminum is so well recognized that architects and builders are deliberately combining aluminum with other materials for attractive effects in exterior and interior treatments.

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Aluminum *from* Canada

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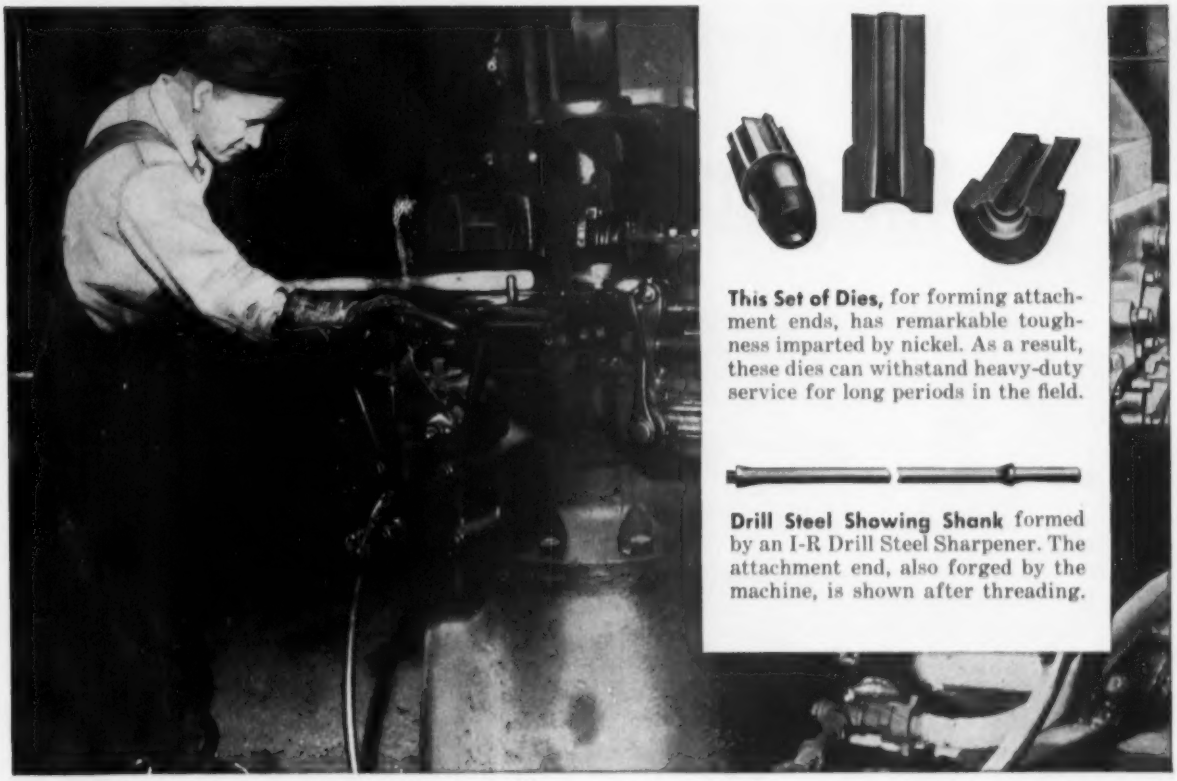

This Set of Dies, for forming attachment ends, has remarkable toughness imparted by nickel. As a result, these dies can withstand heavy-duty service for long periods in the field.

Drill Steel Showing Shank formed by an I-R Drill Steel Sharpener. The attachment end, also forged by the machine, is shown after threading.

Nickel Alloyed Steel Dies contribute to both efficiency and economy of Drill Steel Sharpeners like this Ingersoll-Rand Model 54 . . . a type which often serves in remote parts of the world, where repair and replacement parts are sometimes difficult or impossible to obtain.

How Ingersoll-Rand extends life of Drill Steel Sharpener dies

Operated by compressed air, I-R Drill Steel Sharpeners not only form shanks and attachment ends on Jackrods, but are also used to turn out a variety of other small forgings needed in the field.

Accordingly, you can appreciate why all dies, formers, dollies and the like . . . supplied for this work . . . must have ample stamina for repeated use on the job.

And for this repeated use, Ingersoll-Rand produces these vital parts in a die steel containing from 1½ to 2% nickel.

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This is one more example of the way nickel, either alone or in combination with other alloying elements, makes possible controlled improvement of specific properties. For the best set of properties to improve your products or equipment, look to alloys containing nickel. Send us details of your metal problem for our suggestions. Write us today.

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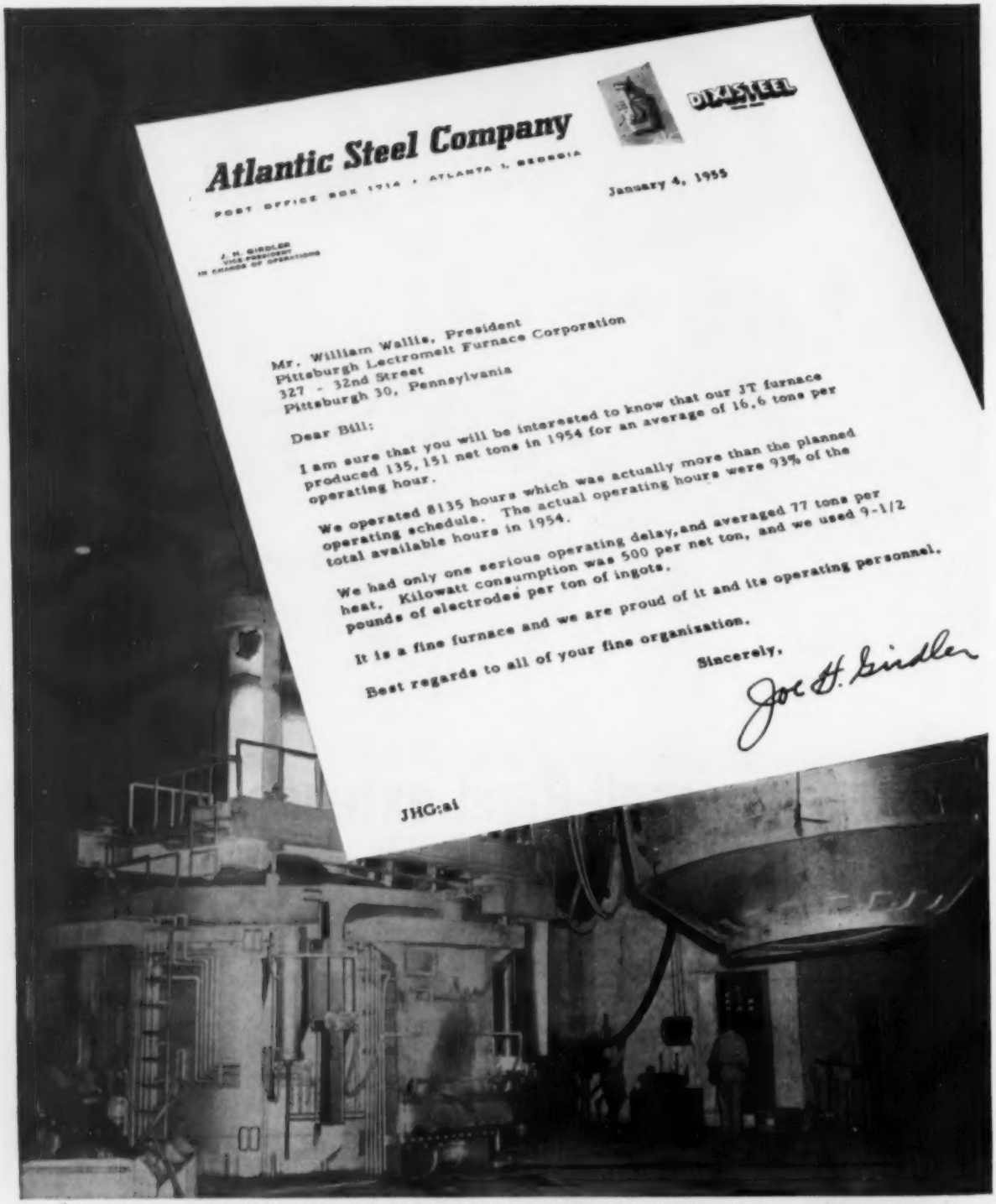
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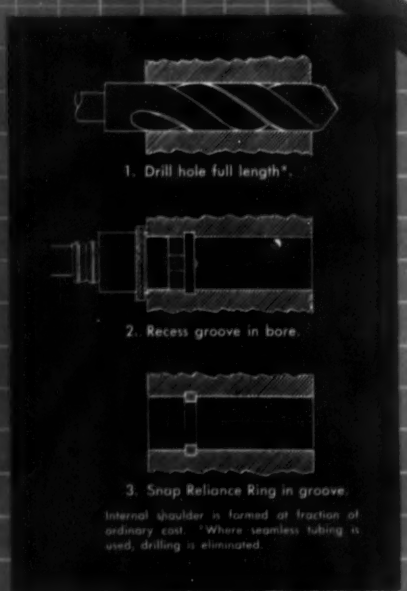
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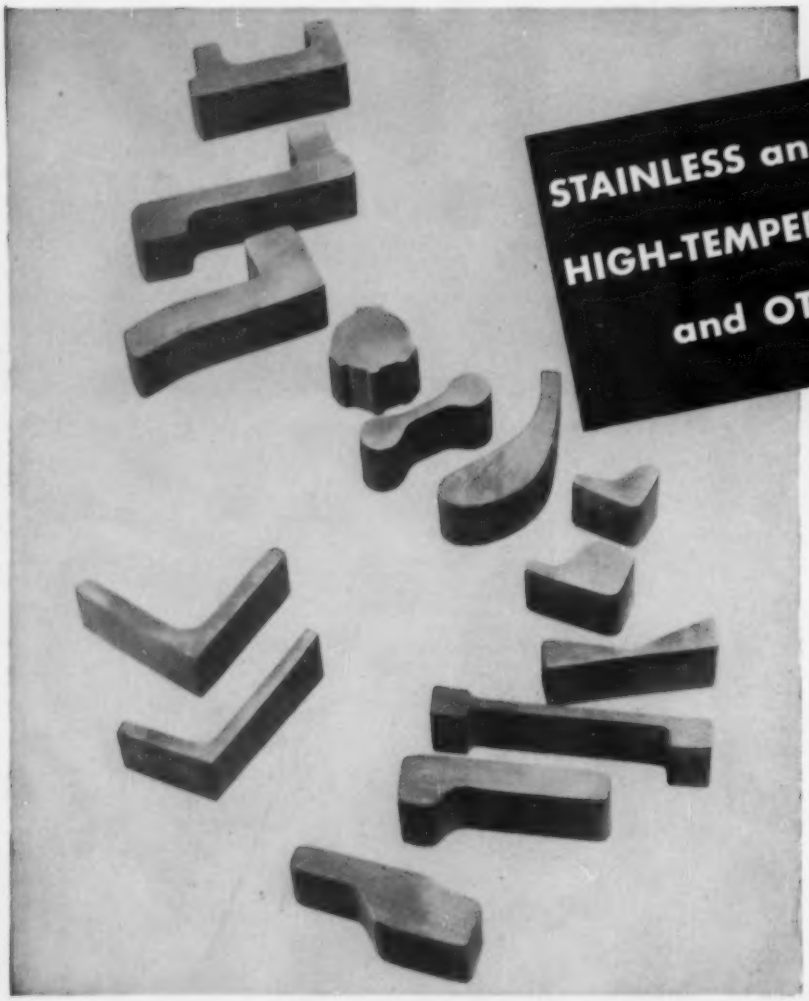

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A-L HOT EXTRUSIONS (solid and hollow) may solve problems for you

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Demonstration cut.
Actual size steel chip. 2" cut .030" feed.

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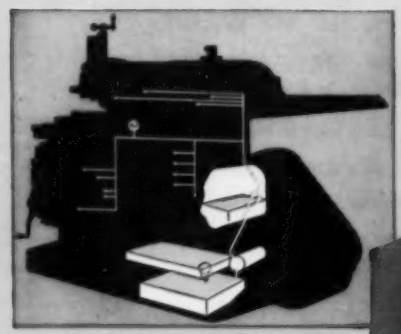

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The Iron Age Newsfront

Need for Aluminum Buildup Discounted

Despite Washington talk, there's no shortage of primary aluminum and no need for a third round buildup of production facilities. More primary aluminum is being turned out than is showing up as mill or finished products, and some users appear to be building inventory. Government's decision to cut stockpiling will make more aluminum available to industry.

Patent Radiation Detector for Cars

A newly patented device warns motorists of radiation dangers. Components are a Geiger counter on the car floor, connected to the battery, and a dial on the fender to indicate the radiation level. Signal would activate horn, buzzer, or light.

Nickel May Coat Cans of Future

Concern over tin supplies in time of crisis may be alleviated if strip makers get the right substitute for a coating material. Strong interest has been shown in nickel and some sources feel it may not be too long before the nickel-coated can becomes a reality.

West Coast Titanium Plant Considered

A completely integrated titanium facility is being planned by a large West Coast company. Facilities would include smelting and all steps required for production of mill products. Western industry will have a single source of all mill products up to the largest size available anywhere.

Fewer Auto Body Parts Suggested

Automotive tooling experts are pondering the fact that a typical body-in-white now contains up to 225 individual sheetmetal stampings. If some of these stampings could be combined, it is argued, production would be speeded up. In some cases, assemblies would be eliminated. Large savings could result from such a move, tooling experts say.

Hardenable Cast Iron Tappets Studied

Extensive engineering research indicates that the use of hardenable cast iron tappets in place of chilled iron offers a major improvement in service life. Increased resistance to fatigue, scuffing and lubricant additive effects is credited to the hardenable cast iron material.

Copper: Supply Grows Tighter

Although the copper shortage may not have reached the critical stage as yet, some major consumers are already paying premium prices. The already tight situation may not reach the tightest pinch until late spring.

Materials for High Speed Aircraft

Aircraft capable of flying at speeds far beyond the speed of sound have spotlighted the need for improved materials capable of withstanding high temperatures arising from frictional heat. Recent studies show certain grades of stainless and chromium steels may be especially useful in these applications.

Plan Expansion of Titanium Facilities

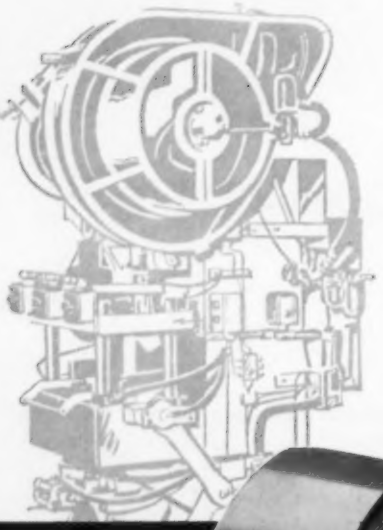
An outstanding authority on the production of titanium, formerly with the Bureau of Mines, has been engaged by a southern titanium producer. It is reported the company plans a sizeable expansion of production facilities.

Control System Simplifies Automation

A central system which can control up to 40 groups of remote operations, each on its own schedule, will considerably aid automation development within the plant. The system does not require special signal wires. Electronic impulses are superimposed on plant electrical distribution system.

LIKE REVOLUTIONARY COST CUTTING PRESSES

that operate with near-human dexterity, superhuman accuracy, speed and endurance and minimum human effort and attention to produce better products faster and more economically . . .



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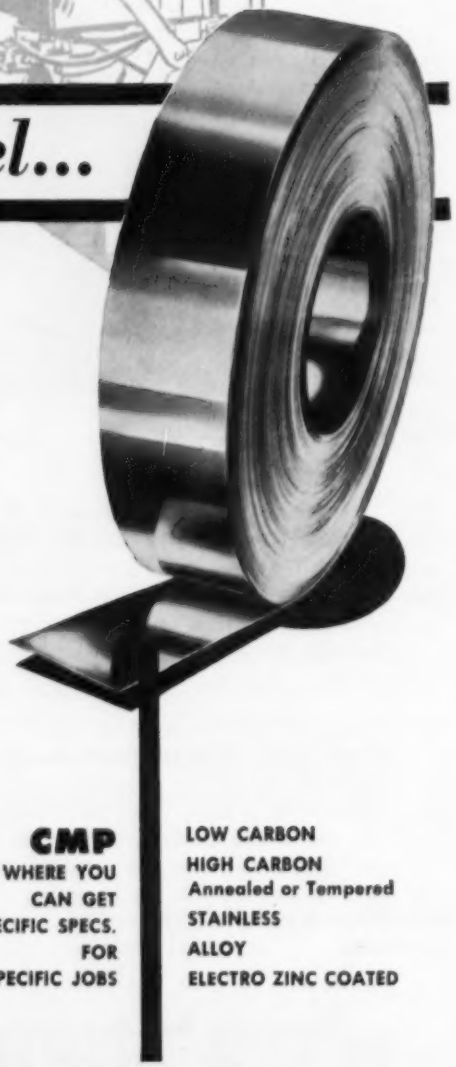

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CMP's precision processing methods hold oversize width and gauge variations within exceedingly close limits (even as fine as 5" ± .003" x .067" ± .001" if required), resulting in . . .

. . . top parts yield per ton . . . more feet per coil . . . fewer production interruptions for coil replacement on automatic feed operations.

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More important . . . in many cases, CMP Cold Rolled Strip Steel can be processed to restricted physical specifications to facilitate, consolidate or even eliminate labor-consuming production operations and handling. Often, a simple specification change can do as much or more to reduce manual costs than expensive new equipment.

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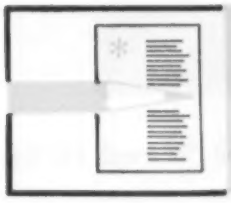


NEWS SECTION
SPECIAL REPORT

COPPER: Low Moan From the Mills

Brass and wire mills ask scrap export controls, relief from stockpile requirements . . . Consumer industries feel shortage effects . . . Unfilled orders climb, prices shake—By *R. D. Raddant.*

◆ MAJOR CONSUMERS of copper products are feeling the pinch of what may develop into a copper shortage of serious proportions.

Big consuming industries of copper and fabricated copper products are already feeling effects of the tight market. These include delayed or unfilled orders, dangerously low inventories, premium prices, and by higher base prices.

Meanwhile, the brass mill industry and copper wire mills ask government assistance to ease what their representatives already call a serious shortage of both the refined metal and scrap.

Representatives of the copper producing industry also favor stricter controls over the export of copper and copper base scrap if it will help alleviate the current shortage. And they do not oppose a proposal that the government release its stockpile inventories of the red metal to industry.

Principal target of the consuming industries is the government stockpile which they believe should be made available to the industry for the emergency. Tighter and extended controls on copper scrap exports are also sought.

Prices May Rise

The current painfully tight market is in sharp contrast to the easy market in early 1954 when the price stood at 29¢ per lb and a 25¢ market was freely predicted. Last week the U. S. price still stood at 33¢, but the jump to 36¢ this week was forecast by a record high on the London market.

The apparent shortage is the result of a number of factors. First, copper users cut their inventories to the bone in the face of predicted lower prices. Second, a series of labor troubles in most of the copper mining areas of the world curtailed the basic sources of supply. Then, the current world - wide industrial boom brought a sudden surge for copper and copper products.

This combination was aggravated in the U. S. by the government stockpile requirements, although government sources indicate that the military take of copper has been declining for several quarters.

Automakers Pay

Makers of consumers goods such as automobiles and the other major users of copper, construction and electrical transmission, are feeling the tight market but do not believe it is critical as yet.

One large electrical company, which purchases as much as 1 million lb of copper a month in cable alone, has no trouble obtaining its requirements. A spokesman predicted, however, that "certain fabricators" would feel a serious pinch before long.

In Detroit a serious shortage has not developed among automakers, but most sources concede the market is very tight. So far, they have been able to purchase all they need, but occasionally at an "increased price."

Business & Defense Services Administration, which has been hearing reports from brass mill, copper wire mill, and copper producing companies, indicates it would be puzzled about the shortage if it were not for the high output of the auto industry and other consumer goods producers.

National stockpile demand for copper at this time is kept secret. In addition to the BDSA, the Office of Defense Mobilization is going to explore the situation. ODM has authority to channel government copper purchases

What's Behind the Copper Shortage?

Major consumers are feeling the squeeze of the copper scarcity. At the brass mill and copper wire mill the situation is even more serious. This is what caused the shortage:

(1) Last year copper users cut their inventories far below safe levels because they thought prices were going down. Instead prices are headed up.

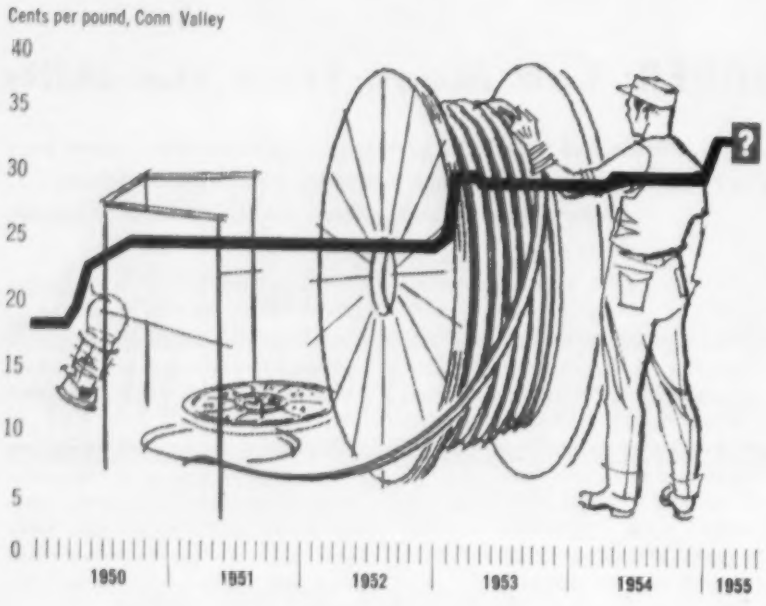
(2) Series of labor flare-ups in most of the copper mining areas of the world limited production.

(3) The industrial boom here and in Europe created a sharp increase in copper demand.

(4) The fantastic prices currently being paid in England and Europe diverted shipments of copper from the U. S.

SPECIAL REPORT

Copper Price Trend Is Up



away from the stockpile if it sees fit.

But the basic consumers of copper, the brass mills and copper wire mills, are feeling the immediate effect of the shortage. Last week the Cable Div. of Copperweld Steel Co. disclosed plans for a temporary shutdown the first week in April because of lack of copper.

"We have plenty of bookings, but not enough copper," explained William W. Ege, vice president in charge of the division. The division is also planning its vacation schedule for May, "since it appears the copper shortage will continue until July," he said.

Unfilled orders of copper wire mills climbed from 125 million lb in the second quarter of 1954 to 167 million lb at the end of the year. The total now is much higher.

Brass mills are operating at only 65 to 80 pct of the operating rate of last December because of the shortage. Unfilled orders climbed from 200 million lb at the end of the second quarter of 1954 to 241 million lb at the end of the year.

The London copper market last week reached an all time high, the equivalent of 45.5¢ compared with the U. S. price of 33¢. There was some levelling off late in the week when a threat of a Chilean strike appeared to diminish. A U. S. price rise, rumored for weeks, would appear inevitable except for strong resistance from producers who believe that higher prices don't necessarily mean more copper.

There is little opportunity for supply to catch up with demand for at least several months. Copper consumption continues at a very high rate and shipments from Rhodesia, where a lengthy strike was recently settled, will not reach the consumer level for at least 60 days. And there is still the unsettled labor situation in Chile to contend with.

Domestic consumption by fabricators in February was 118,786 tons, about 2500 tons above the December-January average. The volume of new business booked by fabricators was more than 140,000 tons compared to the December-January average of less than 128,000 tons. Copper stocks are now at the lowest point since the fall of 1953.

Spokesmen for the primary copper producers met with officials of the BDSA in the third and final scheduled meeting on the copper shortage. They say they do not believe there will be enough expansion in the primary copper producing industry this year to ease the shortage much. But, they indicate they are not sure that the shortage is as bad as the wire copper and brass mill products industry had claimed in earlier meetings.

What Industry Asks

The producers say they believe many of their customers have fair inventories of primary metal now.

Both copper wire and brass mill advisory committees urge the BDSA to help producers meet these growing demands. They asked the government to:

Cut second quarter export quotas of copper and copper base alloy scrap by at least 50 pct and completely embargo exports of scrap for the remainder of the year.

Retain the embargo on refined copper exports.

Make available all government-owned copper purchased under the Defense Production Act and to divert shipments of copper headed to the stockpile to industry for the duration of the emergency.

Delay replacement of copper diverted from shipment to the stockpile last fall to ease shortages caused then by strikes in the U. S. and Chile beyond June 30, original date set for replacement.

Take copper immediately from the stockpile over and above the amount already diverted or withdrawn in amounts big enough to make up an estimated deficiency of 42,000 tons for the period up to and including May.

Export Restricted Now

The last recommendation was modified somewhat by the Copper Wire Committee which also asked that the government not exercise its right to purchase copper for government inventories.

CONGRESS: Its Work Isn't Half Done

At mid-term, surface barely scratched . . . No major bill signed by President . . . Many important bills still in committee . . . Trade act, tax bill are making progress . . . Behind normal pace—By *N. R. Regeimbal*

◆ CONGRESS passed the halfway mark of the current session this week, but still has a lot more to do legislatively before adjournment. A box score of action on major bills shows that the surface has barely been scratched. President Eisenhower has not yet signed a major bill into law.

Most of the first three months of the statutory six-month session has been devoted to reorganizing under the Democratic leadership, investigations, and working on relatively minor bills. The only significant measure so far which has passed both houses and been signed by the President is that raising the pay of congressmen by 50 pct.

Trade Act Moves

A year ago, Congress had a healthy start on major legislation, compared with almost no start now, but still ran 45 days over the adjournment time and several important pieces of legislation were squeezed out of the final log jam. While the number of important measures pending this year is somewhat less than last year, the slowness with which Congress is moving is upsetting the White House and industries interested in specific legislation.

President Eisenhower's request for a three-year extension and liberalization of the Reciprocal Trade Act has made fair progress, winning approval of the House and soon to be reported out of a Senate committee, probably with amendments, for floor action. Most of the Senate amendments will probably pass, and the House is expected to go along with the Senate version in conference.

The tax bill, extending the 52 pct corporation tax and preventing certain wartime excise taxes from dropping as scheduled, has made its way through the House and Senate despite an attempt to write personal tax cuts which almost wrecked it. A conference committee of members from the Senate and House is resolving the differences in the two versions. The bill should be sent to the White House in a week or two.

Hearings are underway on a few major bills, including the highway construction program; the modified universal military training plan, and extension of the Small Business Administration. Several appropriation bills, including those for the Departments of the Interior and Health, Education and Welfare, have been sent out of committee and to the floor.

But still lying on committee desks last week were bills on Taft-Hartley Act amendments; social security amendments; industrial safety; extension of the draft; extension of the Defense Production Act; raising and broadening the minimum wage law; shipbuilding.

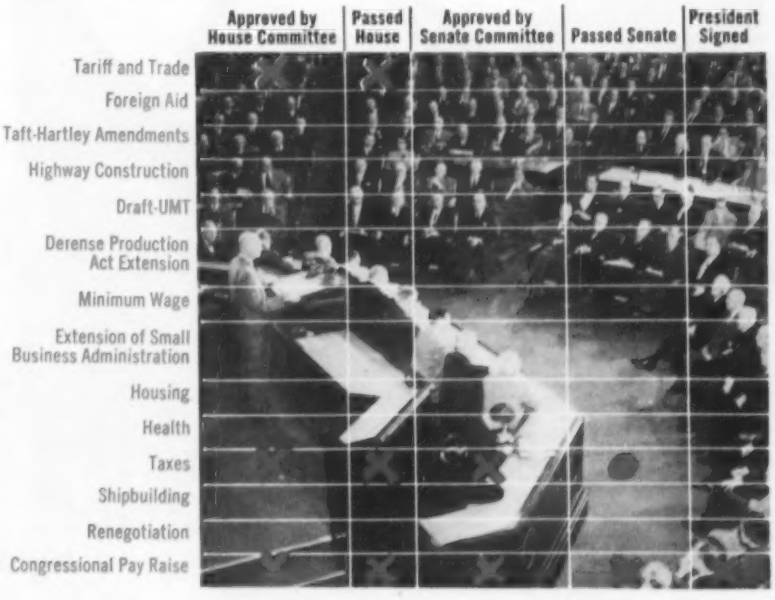
OK Rubber Plant Sale

Sale of 24 Government synthetic rubber plants to private industry was approved in Congress by a substantial margin.

Plants were sold to 14 private firms, primarily large rubber, oil and chemical firms, for $285,465. Total capacity of the war-built plants is 779,000 long tons a year.

Majorities in both the Senate and House turned down protests of a few Congressmen.

Congressional Box Score



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DISTRIBUTION

STEEL: Who Bought in '54?

Automotive dips in '54 but still retains first place . . . Construction-maintenance runs close second while agriculture dips . . . Rails decline—By *J. B. Delaney.*

◆ AUTOMOTIVE, steel's biggest customer, proved it again in 1954, according to an IRON AGE analysis of steel shipments based on a tabulation by American Iron and Steel Institute.

Shipments to auto companies by mills, warehouses, and distributors during 1954 totaled close to 13 million tons, compared with 16.5 million tons in record-breaking 1953. This represented a 21 pct decline, but was 20.52 pct of the 63.2 million tons shipped to all industry and export.

Running a close second to automotive as a steel consumer in '54 was Construction-Maintenance, which accepted delivery on 12.9 million tons, according to THE IRON AGE breakdown. Percentagewise this was 20.44. Shipments to this group in 1953 totaled 14.2 million tons.

The steel industry shipped container companies 6.4 million tons, or 10.18 pct of the total, compared with 6.8 million tons the previous year.

Rails Off 50 Pct

Oil, gas, water, and mining, as a group, consumed 6.0 million tons, compared with 7.2 million tons in 1953. Machinery and tools dropped sharply from the previous year, accounting for 5.8 million tons as contrasted with 7.3 million tons.

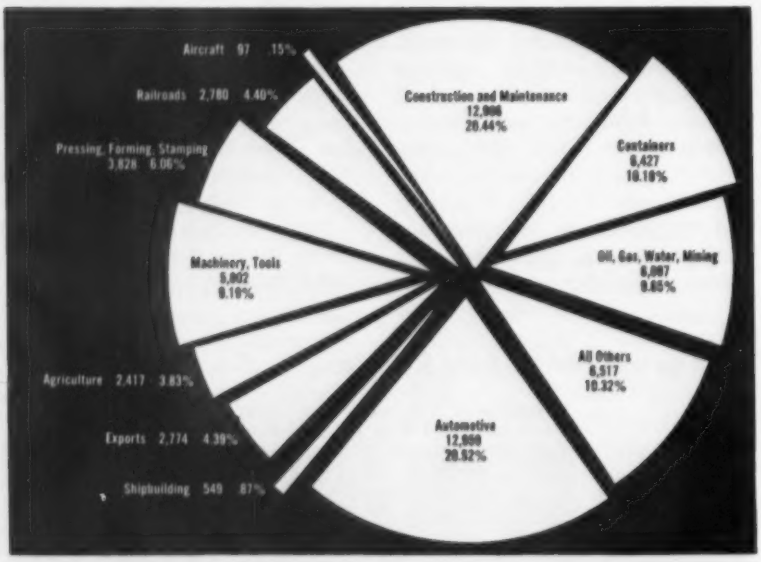
Pressing, forming, and stamping accounted for 3.8 pct of steel shipments, a 22 pct decline from the previous year's 5.0 million tons.

A whopping 50 pct drop was registered by the railroads, which took in 2.8 million tons as compared with 5.5 million tons in 1953. Export was off only slightly—2.8 million tons versus 3.0 million tons the previous year.

Agriculture bought 2.4 million tons, a slight decline from the 2.5 million tons of 1953. Shipbuilders took in only 548,782 tons, off from the 976,000 tons of 1953. Aircraft consumed 97,046 tons compared with 180,000 tons in '53.

Other industries, including industrial fasteners, ordnance and military, consumed close to 6.0 million tons, a decided drop from the 11 million tons of 1953.

Where Steel Production Went in '54



STEEL DISTRIBUTION BY CONSUMING INDUSTRIES

In Thousands of Net Tons

	1947		1948		1949		1950		1951		1952		1953		1954	
	Tons	Pct	Tons	Pct	Tons	Pct	Tons	Pct	Tons	Pct	Tons	Pct	Tons	Pct	Tons	Pct
Agriculture	2,422	3.84	2,743	4.16	2,884	4.00	3,084	4.26	3,281	4.16	2,704	4.07	2,547	3.18	2,417	3.83
Aircraft	44	0.07	39	0.06	44	0.06	56	0.08	167	.21	153	0.23	180	0.23	97	.15
Automotive	10,292	16.32	11,330	17.17	11,888	20.45	15,746	21.80	14,488	18.36	12,232	17.99	16,506	20.59	12,959	20.52
Construction and Maintenance	10,039	15.92	10,187	15.40	10,029	17.25	12,363	17.12	14,184	17.98	11,749	17.28	14,225	17.75	12,906	20.44
Containers	5,566	8.87	5,644	8.55	5,026	8.65	6,400	8.87	7,242	9.18	6,216	9.15	6,799	8.48	6,427	10.18
Machinery, Tools	5,648	8.96	5,337	8.09	4,274	7.36	5,812	8.05	7,033	8.92	6,131	9.02	7,307	9.12	5,802	9.19
Oil, Gas, Water, Mining	3,033	6.08	5,080	7.70	5,455	9.39	6,619	9.16	6,735	8.54	5,973	8.78	7,211	8.98	6,087	9.65
Pressing, Forming, Stamping	3,770	5.98	4,296	6.45	3,124	5.38	4,901	6.37	4,817	6.05	3,640	5.35	4,994	6.23	3,828	6.06
Railroads	5,999	9.51	6,086	9.09	4,038	6.95	4,796	6.64	6,556	8.32	4,576	6.73	5,454	6.80	2,780	4.40
Shipbuilding	373	.59	716	1.09	722	1.24	358	.49	981	1.25	1,152	1.70	976	1.22	549	.87
Exports	4,639	7.36	3,870	5.42	3,796	6.54	2,783	3.85	3,068	3.89	3,665	5.39	2,988	3.74	2,774	4.39
All Others	10,402	16.50	11,029	16.72	7,077	12.18	9,560	13.29	10,873	13.40	9,790	14.34	10,988	13.71	6,517	10.32
Total	63,057	100.00	65,973	100.00	58,104	100.00	72,233	100.00	78,929	100.00	68,004	100.00	80,152	100.00	63,153	100.00

IRON AGE compilation and distribution formula from data by American Iron and Steel Institute.

MACHINERY: Farm Equipment Sales Up

Farmers are buying 20 pct more equipment than last year . . . Volume ahead of pre-season forecasts . . . Manufacturers purchasing 50 pct more steel than year ago . . . Dealer inventories are down—By K. W. Bennett.

◆ CAN FARM equipment continue to hold its current 20 pct sales gain over the opening months of last year? Last week, the industry was counting on maintaining current level through first half, commented that the crystal ball was muddy from that point on.

A 20 pct gain in farm equipment sales is no boom. It amounts to just a little over the industry's decline during 1954 from the levels of the year before. It does, however, spell the end of an inventory problem that plagued farm equipment producers both at the finished goods level and in their raw material inventories.

A check of purchasing agents would indicate the industry is currently selling about 20 pct more equipment than it did at the same time a year ago and that the order rate for new equipment is still advancing on year-long selling items (as opposed to equipment specifically for use in planting or harvesting seasons).

At the same time the industry is purchasing an estimated 50 pct more steel than it did during the same year-ago period, and will continue to do so through first half 1955.

Forecasts Upset

A plus factor this year will be the expansion into materials handling and earth moving equipment by farm equipment producers in 1954. Both are currently fast-stepping markets with strong futures. Despite declines in capital expenditures in 1954, the product line of the industry expanded considerably and will again this year.

John Deere, for instance, is beginning production of chemical fertilizers; Massey-Harris-Ferguson is expanding Australian operations after already having shown a 66 pct advance in sales abroad during 1954; Allis-Chalmers, already a major producer of heavy electrical equipment, is beginning work on the electrical generating equipment to be harnessed to a 5000 KW nuclear reactor; Oliver Corp. is making a rapid entry into the spring outboard motor market.

Farm forecasts are traditionally short-lived, and the farmer is buying up to 10 pct more than even the optimists calculated he would when they began charting 1955 sales possibilities in the final three months of 1954.

The sales chiefs who still have time to do a post-mortem, say here's why:

Dealer inventories in farm equipment lines are in excellent shape. Though factory output of most equipment lines dwindled sharply last year, dealer sales held relatively better. Tractor production for farm use almost halved while retail sales declined about 13 to 15 pct. Farm income declined between 5 and 10 pct, suggesting some deferred purchasing.

In the opening months of 1955, builders will hit a peak in new models and redesign of older models, with considerably more to come. Allis-Chalmers has added to its self propelled harvester line; Massey-Harris-Ferguson has added side mounted balers and forage harvesters; J. I. Case and others have brought out a number of new tractor designs onto the market; International-Harvester still has the only torque amplifier tractor, and is making further design additions to this line.

Used tractor sales are picking up, and to the individual dealer, a pileup of used equipment on his lot can be as alarming as a build-up of the newly manufactured article.

Couple these factors with reports of crop improvement, particularly from the Southwest, and with still advancing export sales, sales chiefs say, and you have a fair sampling of the factors contributing to the surprising willingness of the farmer to overshoot.

Turn Page

How Is It Down on the Farm . . .

Farm equipment sales are running 20 pct ahead of same time last year. Equipment manufacturers are buying 50 pct more steel than in the first part of '54.

Crop outlook is good—particularly in the Southwest . . . and the big months for the farm equipment retailers—April and May—are still to come.

INTERNATIONAL

EAST EUROPE: Reds Seek Trade Sources

Leipzig Fair showplace for Red goods . . . Delivery prompt, gains despite lower Asian prices, stepped up home demands . . . Look for new markets and trade outlets—*By T. C. Clark.*

◆ IRON CURTAIN countries are stepping up their drive for increased Western trade. Apparently they have the goods, can deliver and at prices that are attractive to West Europe countries.

These conclusions were drawn from a visit to the Leipzig Fair, revived this spring for the first time since 1951. The historic trade fair, over 800 years old, was used as a backdrop for a mixture of propaganda and sales of manufactured goods.

Only four countries had their own buildings: Russia, Czechoslovakia, China, and India. The Russian building, built in 1949 is a tremendous structure, with a large center hall, side rooms and balcony. Exhibits included the three standard Russian automobiles, machine tools, textiles, china, carpets and furs, attractive to the half million visitors from 36 countries.

If an expanding trade with the East is in the cards, Russia and her satellites have the products for export and they are making every attempt to alert the rest of the world that they are ready for expanding their foreign trade.

But even so, most of the Leipzig business transactions were between Eastern countries, although Turkey was an exception. Representatives from France and Italy were also active purchasers of hard goods. All prices were quoted in either dollars or pounds sterling with the Peoples Government the contracting agency.

Communist nations capitalized on the traditions of the Leipzig Fair, which dates back to 1160, to use the East Germany exposition for their own purposes of propaganda and politics. They showed they are out to do business with the West and are organized, perhaps over organized, to do it.

Of all exhibiting nations, the Czechoslovakia delegation was outstanding. The machine tools were not copies; a little Skoda car at $1000 looked good; motor bikes and motorcycles were new in design and glassware was outstanding.

Temporary Prosperity

The fair created a temporary prosperity for the people of Leipzig, contrasting to the usual tough living conditions of East Germany. Shops received goods in advance of the fair. Free stores had most items for sale, but in limited quantities, shoddy quality and high prices.

Immediate sales were urged. Next year's fair is a long way off.

Dr. Tom C. Clark gained a wide knowledge of European industry, commerce and politics in a 2-year term in Paris as chief of the iron and steel section for all Marshall Plan European steel industry projects. He is an authority on the Schuman Plan and has written a number of articles on European industry and economics.

MARKETING *continued*

The advance is not merely the seasonal high spirits salesmen often feel with the opening of the golfing season, one comptroller pointed out. Where first quarter financial statements are complete for farm implement companies, results cluster somewhere in the neighborhood of 20 pct above first quarter 1954.

Business Improving

Though farm implement manufacturers were building to their old 60 day raw material inventory levels by January, in most cases the sales rate had not been predicted for its present level. The result is that growing farm equipment pressure for plate, sheet, and bar can be expected in April and May as production of harvesting equipment gets into full swing. This must be fed from inventories that are already stretched by increasing tractor manufacture and slowing mill steel deliveries. Spring and chain are expected to offer some difficulty by May, perhaps earlier.

Things are getting better, and many now point out they could have been worse. In fiscal 1954 the farm equipment industry lost as much as 30 pct of its defense work, particularly in the winter of 1953-54.

Components manufacturers, still not seeing the current strength of the farm equipment advance in their own sales, may not agree. But the optimists who like to use tractor sales as a barometer are betting that second half will duplicate first, that farm equipment may be headed for more nearly a 20 pct advance for the entire year than the 10 pct forecast as early as October.

After all, the big sales months for retailers, April and May, are still ahead, they point out, and already demands for more stock are coming back to the home office. When tractors sell, it's often proven the case that the equipment they are built to pull will follow along in market volume just as it does out on the job.

IRON ORE: Canada-Japan Trade Drops

British Columbia producers are fighting to hold on to market gains despite lower Asian prices, stepped up home demands . . . Look for drop in future ore shipments to Japanese mills.

◆ BRITISH COLUMBIA iron ore producers are faced with a two-front battle to hold on to recent gains made in the Japanese steel market.

On the one hand, they are witnessing a gradual decline in Japanese purchases of magnetite ore caused by lower prices available for similar grades to Japanese mills from Asian sources.

On the other hand, Canadian steelmen are insisting that Canadian ore should be smelted in Canada. This demand is backed up with increasing home need for: (1) linepipe, (2) highway bridges, (3) factory buildings, (4) new housing.

The Japanese Embassy in Ottawa estimates that total ore shipments to Japan in 1954 will amount to about 558,800 gross tons. This compares with total 1953 ore exports of 923,544 gross tons, amounting to more than $7 million.

Launched in 1951

In 1951—the year British Columbia iron ore development got underway—total annual exports were less than 87,000 gross tons.

The largest British Columbia producers are Texada Mines Ltd. and Argonaut Mining Co. Ltd. The Texada properties are on Texada Island about 20 miles from the mining town of Nanaimo on Vancouver Island. Argonaut is located at Quinsam Lake on Vancouver Island.

Both mines produce only magnetite ore. So far government geologists have found little major hematite deposits in the area.

Ore grade from Texada varies from 30 pct Fe to 50 pct Fe. Argonaut ore grades average about 36 pct Fe. Daily production at Texada during 1954 ran at 1,524 gross tons. No figures on last year's Argonaut daily output have been released.

Total annual production in 1953 at the Argonaut properties reached 1,342,213 gross tons. Of this, approximately one-third or 558,800 gross tons was shipped to Japanese mills. Texada output for the year totaled 523,174 gross tons of which about two-thirds or 335,280 gross tons went to Japan.

Canadian Prices Up

Price-wise, Canadian ore exports to Japan are currently averaging $5 higher per ton than two years ago. Japan's Kyodo News Agency reported early this year that Indonesian ore is selling at $13 to $14 a ton. These prices were available in Canada in 1953—the country's biggest ore exporting year—but have since risen to $18 and $19 a ton.

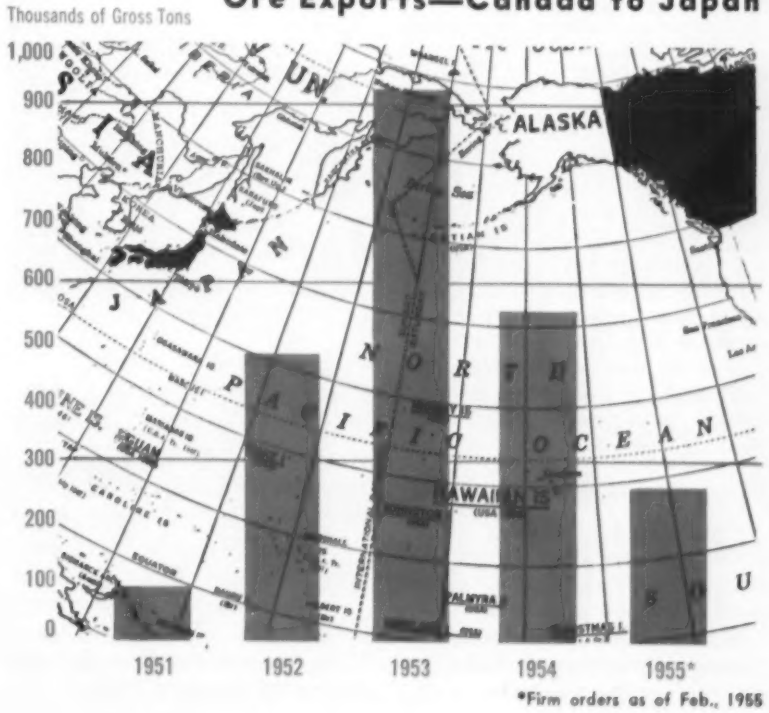
Kyodo went so far as to estimate that British Columbia 1955 ore exports to Japan would drop to about 203,000 gross tons because of price variances. The Canadian price boost was first made by the Texada mine.

The matter of steel imports from Japan is also posing price problems for Canadian producers.

During the past 3 years some ore exported to Japan at prices varying between $10 to $12 a ton returned to Canada as firm steel orders for British Columbia concerns. Some types of steel (½-in. to 1-in. plate) sold for as much as $200 a ton.

This activity was largely halted last year through complaints from Provincial authorities and steel fabricators.

Ore Exports—Canada to Japan



*Firm orders as of Feb., 1955

INDUSTRIAL FURNACES: Strong Upturn

Improvement better than expected . . . Industry looks for gains of 25-30 pct over '54 . . . Surge based on solid foundation of industrial and consumer accounts . . . Backlogs "fair to good"—*By K. W. Bennett.*

◆ THE YEAR 1955's still climbing industrial activity will probably send battalions of economic forecasters to an early grave. The month of March is adding another industry to the list that has overshot the most optimistic outlook. Industrial furnaces, after a poor 1954, were predicted for a 10 pct gain in 1955. By February, people in the industry had boosted their appraisal to a 20 pct increase.

Last week, the industry was speaking of a 25 pct advance, and optimists who were taking heart as backlogs continue to advance were speaking of gains up to 30 pct over 1954 for the entire industry, with gains of as much as 50 pct for their own firms.

The buying is general. No industry seems to be ahead of the wave, though automotive, farm equipment, construction equipment, and steel treating accounts are mentioned most often. Surprise business increases at the consumer level, in most cases stronger than had been anticipated, were breaking loose investment capital dollars that were tied up in 1954.

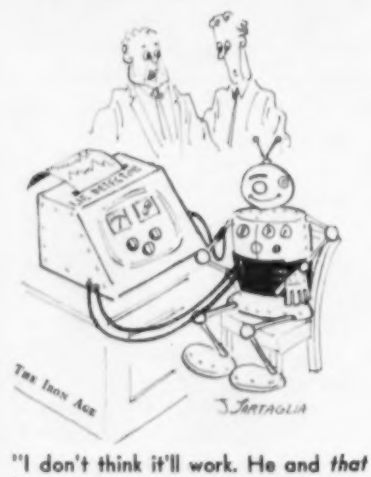
A 25 pct rise in industrial furnace sales would mean an advance to $30,887,000 in fuel fired furnaces, and a climb to $22,945,000 on electric furnaces this year. It would spell a halt to the gradual decline in sales volume from the 1951 peak, ($59,262,020 and $43,497,718 respectively) though still below the 1953 level.

Backlogs Fair to Good

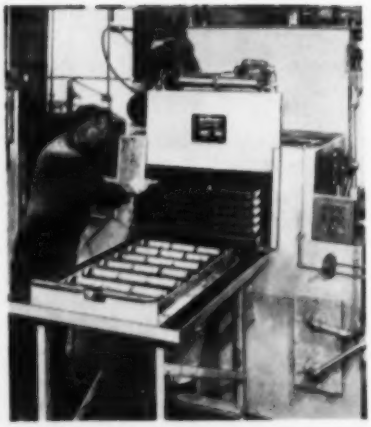
Comparisons of current month sales with the same period one year ago give the upswing in industrial furnace sales a skyrocket look. On Mar. 1, Carl L. Ipsen, executive vice-president of the Industrial Heating Equipment Assn. reported an 86 pct rise in December, 1954, over December, 1953. In January the advance was 37 pct. With late 1953 and beginning 1954, a period of declining sales, industrial furnace men acknowledged the gain but remained cautious. Backlogs had been cut to a dangerously low point by the beginning of November, 1954. Shipment figures were high, new orders low.

The current situation is a reversal, even though backlogs are described as still only "fair to good." Orders already on the books will carry second quarter 20 pct ahead of first quarter 1955. Though third quarter is a question mark, current ordering indicates that this will continue strong and the sharp cutoffs that were originally anticipated in that period are now fading.

Cary Stevenson, vice-president of sales for Lindberg Engineering describes 1955 as "without doubt an improvement over 1954, and second quarter is showing a positive improvement over first quarter. We believe that buyers generally are showing considerably greater optimism. It certainly would seem to indicate a strong sales level through the remainder of the year."



"I don't think it'll work. He and *that* lie detector are good friends."



INDUSTRIAL furnace business is on the upgrade. Industry is talking in terms of 25 pct rise over '54.

Donald Gardner of Sunbeam Corp.'s Industrial Furnace Div. agrees. He told the IRON AGE, "There's no doubt about it. Second quarter is showing an improvement again over a first quarter advance. I don't have a crystal ball, but it looks as though we'll have to beat 1954 this year, and the business level thus far certainly indicates it."

Solid Advance

With the advances previously reported in presses, welding equipment, machine tools, and other capital equipment — it's positive that capital equipment expenditures in 1955 will beat the levels regarded as optimistic even as late as January. Part of the demand, as exemplified by furnace builders, is deferred 1954 demand.

RESEARCH: Tool for Diversification

Laboratories generate new products for Pittsburgh firm . . . Eight plant locations have formal research departments . . . Further expansion gained through acquisitions . . . Standards are high—By W. G. *Brookfield.*

◆ A SOUND RESEARCH and development program can provide the basis for building a diversified company.

The "diversification - through - research" technique has been developed to a fine point by The Rockwell Mfg. Co., of Pittsburgh. During the last five years, over 60 pct of Rockwell's new products have come from the company's own laboratories.

Further diversification has been achieved through acquisition of other companies—nearly a dozen since end of World War II.

Research and development facilities are divided into three primary groups to assure continued diversification of product lines: valves and meters, including lubricated plug valves, gas meters, water meters, and industrial meters; power tools, both industrial and homecraft; other products, including valve lubricants, taxi meters, parking meters, and fare registers.

Company Growth

New products are developed with an eye to long-range possibilities and their adaptability to the existing manufacturing resources. While diversification is important to the company, it will not sacrifice product security for immediate sales volume. To reach the manufacturing stage, products must fill the demands of a growing, profitable market.

The company's diversification program was started in 1927 under the direction of Col. W. F. Rockwell, present chairman. Water meter business of Westinghouse Electric Corp. was acquired to complement Rockwell's gas meter line. This gave the company an offset to the spring-summer decline in gas meter business.

Today, Rockwell operates 14 plants in 10 states and sells to 15 major markets, with over 25,000 customers on the books. Shipments over the last three years have averaged $85 million, an increase of more than 475 pct over prewar volume.

Research and development facilities have grown hand-in-glove with expansion. Eight plant locations have formal research departments and a central research laboratory is maintained in Pittsburgh. The Edward Research Laboratory in East Chicago, Ind., is considered a model in the steel-valve industry. Newest research facility, completed last year, is a meter and valve testing station near Pittsburgh. This "working" laboratory permits testing under actual field conditions.

Approximately 235 employes work on research and development activities.

Chilton Co. Elects Top Executives

G. C. Buzby

J. S. Hildreth

JOSEPH S. HILDRETH has been elected chairman of the board of the Chilton Co., publishers of leading trade and business papers among which is THE IRON AGE.

G. CARROLL BUZBY was made president of the Chilton firm at the regular meeting of the board of directors held recently.

Mr. Hildreth had been president of the company since 1945. Prior to that, he was president of the company's Automotive Division. He has spent 57 years in the publishing field.

Mr. Buzby, son of one of the founders of the Chilton Co., has been associated with the publication of *Automotive Industries, Commercial Car Journal* and *Motor Age* for the past 35 years.

FINANCIAL

MERGERS: Tough Federal Policy Seen

Government agencies recommend firm enforcement of existing law . . . Effect on competition would be criterion . . . Antitrust committee favors delivered pricing . . . Auto mergers lead—*By N. R. Regeimbal.*

◆ VIGOROUS enforcement of existing antitrust laws, rather than major legislative amendments, is the answer to the recent "urge to merge." That's the conclusion two government agencies have reached after studying the trend toward consolidations.

Justice Dept. this week officially made public a lengthy report of its special committee of experts set up to study the antitrust laws. In about a month, the Federal Trade Commission will make public its analysis of the extent and significance of the recent merger trend. The FTC study, it is reported, will contain few, if any, recommendations for new legislation.

Conclusion of both studies is generally that the "rule of reason"—legality of a merger is dependent on its effect on competition, not on size—should be applied vigorously to mergers between large companies, such as the proposed consolidation of Bethlehem Steel Co., and Youngstown Sheet and Tube, and also that it should be applied more frequently to proposed mergers between smaller firms.

"The tendency-to-monopoly clause . . . should be construed to slow an appreciable growth toward monopoly by even relatively minor acquisitions," as well as to block major consolidations, the Justice Dept. report says.

Favor Delivered Pricing

In applying the legal test of whether acquisition of assets or stock tends to "substantially lessen competition," trust-busters should, the committee asserts, consider the character of firms involved, markets affected, immediate and long-term changes in the size and competitive range of the acquiring company and adjustments it will cause in competing companies, the opportunity for entry into the market before and after a merger, and the opportunity for entry growth and profits of the merging firms and their competitors.

Delivered pricing, which has been under a cloud for several years, got a boost from the antitrust study committee. The group looked favorably on the practice, provided a conspiracy to fix prices or restrain trade is not involved. "Collusion can flourish under an f.o.b. system, just as it can under delivered pricing," the committee concludes, adding that antitrust policy is actually served when sellers are free to meet competition in distant markets by absorbing delivery costs to "equalize the freight advantage of more favorably situated competitors."

Price discrimination charges should be dropped when a businessman can prove his price cut was made in good faith to meet competition, the group continues.

Would Double Fines

The group after studying the labor union exemption from antitrust laws, concludes only that a new law might be needed to curb union activities which restrain trade and competition between employers.

Other suggestions would double the present maximum antitrust fine to $10,000; permit the government to sue for actual damages suffered from antitrust violations; permit periodic checks by the Justice Department on whether judicial decrees are restoring competition, and give discretionary authority for federal judges to award less than treble damages in private antitrust suits.

The FTC survey will attempt to determine the economic importance of mergers and acquisitions in specific fields as well as to the general economy. It will also try to determine the extent to which mergers have been vertical, horizontal, or conglomerate (combination of firms in unrelated fields) and uncover the motives and causes.

Early reports indicate the survey will show that the biggest wave of mergers in the past six years has been in the banking, automotive, chemicals, dairy and textiles industries, although many consolidations have occurred in primary metals and baking fields.

Government on Mergers

While the present "wave of mergers" has not yet approached the scope of the trust-forming eras of 1887 to 1904 nor of the late 1920's, the number of consolidations each year, according to an informal government report, represents a "serious" problem.

In addition to the industrial and financial giants which have, or have sought to, spread out, many smaller firms have consolidated. The Federal Trade Commission has under study 209 mergers or acquisitions.

Some of the more important consolidations recently involve Chrysler Corp., and Briggs Mfg. Co.; Olin Industries, Inc., and Mathiesen Chemical Corp.; American Cyanamid Co. and Heyden Chemical Corp.; Nash-Kelvinator and Hudson Motor Car Co.; Packard Motor Car and Studebaker Corp.; and American President and American Mail Lines.

Attack:

Plan to scatter vital U. S. agencies if enemy strikes.

Industry men would have to hunt around some to find the Federal government if war threatened or hit the capitol—but in time they'd find the old bureaucracy at work in about 30 widely scattered centers.

Defense planners have selected locations over a wide area for essential executive agencies. These "emergency relocation sectors" are anywhere from 80 miles north of Washington in Pennsylvania to 200 miles south of the capitol in North Carolina. Congress has not yet selected a hideaway.

To Man Outposts

This spring a half-dozen persons from each agency will go to emergency centers for a two-week tour of duty. Another dry run is slated in June in connection with a nation-wide civil defense test.

Ultimate goal of the planners is to have staffs permanently stationed at the emergency centers to direct operations until higher officials arrived. Most of the relocation centers are secret. Many of them are colleges and universities, considered good sites because of dormitory and dining facilities.

The Defense Dept. already has its huge "underground pentagon" set up in a cave in the mountains near the Maryland-Pennsylvania border to take care of the President and the top military command.

Glider May Ride High

Airmen may some day fly anywhere on earth in 2 hours in a piloted, rocket-boosted glider. Ship would be "shot" 40 miles above the earth and reach speeds of 13,000 mph.

Dr. Walter Dornberger, guided missile consultant for the Bell Aircraft Corp., Buffalo, says such an aircraft may become a reality sometime in the future. The glider would be launched vertically by rockets placed either behind the craft or riding piggyback on it. When it reaches an altitude of 40 miles, craft would assume a horizontal flight and glide to its destination through the very low pressure but extreme temperatures of the upper border of the atmosphere.

Contracts Reported

Including description, quantity, dollar values, contractor and address. Italics indicate small business representatives.

Kits, radar, 23, $506,713, Hoffman Laboratories, Los Angeles, Calif.

Drill mine kits Mk 4, 620, $298,941, Charles T. Brandt, Inc., Baltimore, Md.

Computer, 14, $9,313,486, Ford Instrument Co., Long Island, N. Y., *Charles Arcularius.*

Bomb, fire, 71661 ea, $5,448,815, Evans Reamer & Machine Co., New Lexington, Ohio.

Computer kit, $474,463, General Motors Corp., Milwaukee, Wis.

Kit transformer, 12429 ea, $325,927, General Motors Corp., Milwaukee, Wis.

Radio set, $3,200,000, Collins Radio Co., Cedar Rapids Co., Cedar Rapids, Iowa, *John H. Wagner.*

Control gyro, 2680, $3,999,056, Lear, Inc., Grand Rapids, Mich.

Special tools, $1,750,000, General Electric Co., Cincinnati, Ohio.

Airplane tools, 84, $2,750,000, Canadian Commercial Corp., Washington, D. C.

Data recorders, 3000, $1,200,000, Bell and Howell Co., Chicago, Ill.

Dynamometer vehicle, 150 ea, $571,050, Clayton Mfg. Co., El Monte, Calif.

NEW EJECTION seats for pilots of vertical takeoff planes zoom over a Pacific surf. They were tested from a California cliff in escape research for new types of planes now being built.

EXPANSION IN INDUSTRY

Furnaces:

Atlantic Steel to place No. 2 Lectromelt in operation.

Atlantic Steel Co., Atlanta, has purchased a second 75-ton Model JT Pittsburgh Lectromelt Furnace. Delivery of the new unit is slated for late fall this year.

The initial furnace installed by the company produced 135,151 net tons of ingots in 1954.

The unit operated 8,135 of the available total of 8,760 hours for an average of 16.6 net tons of ingots per hour. The average heat size was 76.4 tons.

Electrical consumption was 500.3 KWH per net ton and the company used 9½ tons of electrodes per ton of ingots.

Total scrap charge for the year was 147,900 tons with 29 tons of pig iron used. The yield was 91.4 pct. Normal charging practice for the company is one original charge and three back charges.

In January, 1955, the furnace produced 12,692 net tons of ingots in 744 hours of operation with 167 heats averaging 76 tons. This was an average of 17.1 tons an hour.

Electrode consumption averaged about the same as last year with power consumption slightly less.

Roof life averaged 80 heats and the company has had as many as 117 heats with one roof.

Boost Mill Facilities

Two major construction contracts have been let for the steelwork and yard utilities at Kaiser Aluminum & Chemical Corp. rolling mill near Ravenswood, West Va.

Fabrication of approximately 3,700 tons of steel for structural members of the 990 ft long, 9-bay main mill building will begin at once.

Erection of the steelwork is scheduled for completion by Sept. 30. Completion date for the yard utilities is set for August 15.

Procurement and design activities for the aluminum sheet and foil rolling mill are being carried out by Kaiser engineers in Oakland, Cal.

Step Up Facilities

Construction will begin this month on a two-story office building and a one-story factory and warehouse for Gerrard Steel Strapping Div. U. S. Steel Corp., Chicago. The new installation will increase present work space by more than 60,000 sq ft.

Construction is slated for completion late this year.

The company produces round and heavy duty flat steel strapping. It also turns out strapping equipment ranging from light-weight hand-operated units to semi-automatic machines.

Engines:

GM invests $75 million in aircraft engine program.

A $75 million research and development program is underway at General Motors Allison Div., Indianapolis.

Construction of the first phase of additional engineering testing facilities for development of gas turbine aircraft engines will begin this year. The program is slated for completion in 1959.

The new facilities are geared to meet increasing military and commercial needs for latest design turbo-prop and turbo-jet aircraft engines.

Present divisional area devoted to engine research, amounting to 500,000 sq ft, will be doubled under the new program. Engineering and technical staffs will be increased approximately 40 pct.

The division also turns out aircraft propellers, tank transmissions and power trains and aircraft bearings.

Adds New Markets

Lukens Steel Co. has launched a 5-year expansion program of its current markets which is geared to intensify product development to include diversification outside the capital goods field. A leading producer of steel plate, Lukens will begin manufacture and marketing of end products and also enter markets foreign to the company's historical base.

The company last year recorded gross sales of more than $74 million, third highest in its 145-year history. Describing his organization's program for intensified product development, president Charles L. Huston, Jr., cited recent marketing and economic studies which indicate: (1) construction industry will increase its use of steel plate by 20 pct (2) electrical equipment manufacturers will use 18 pct more steel plate and (3) industrial machinery and process equipment will increase steel plate demands by 30 pct. Mr. Huston added that at the present time about 75 pct of his company's gross sales go into these three major markets.

Make More C-R Sheet

Great Lakes Steel Corp., Detroit, largest supplier of flat-rolled products to the automotive industry, plans to increase production of cold-rolled sheet by a minimum of 600,000 tons per year. All facilities included in the expansion program are scheduled to be in operation by the end of 1955.

Develop New Area

Chain Belt Co., Milwaukee, has purchased 47 acres near Downers Grove, Ill. for additional development of its Shafer Bearing Div. manufacturing facilities.

The division produces mounted roller bearings for industrial and aircraft uses.

BIG HOBBERS for ILLINOIS GEAR

This mammoth new gear hobbing machine, now in operation at Illinois Gear, is the most accurate and largest machine in existence for fast precision hobbing of BIG gears. Equipped with 12" x 15" ground hobs, the largest ever made, it does precision work on blanks up to 100,000 lbs. and 134 inch diameter, 3½ inch C.P. and 54 inch face. Spur, helical and worm gears can be cut to spacing tolerances as low as .0003 inch.

Whatever your needs, you'll find the right machine and tool for your job at Illinois Gear.

Look for this mark (ILL) *... the symbol on finer gears*

ILLINOIS GEARS Reg U S Pat Off

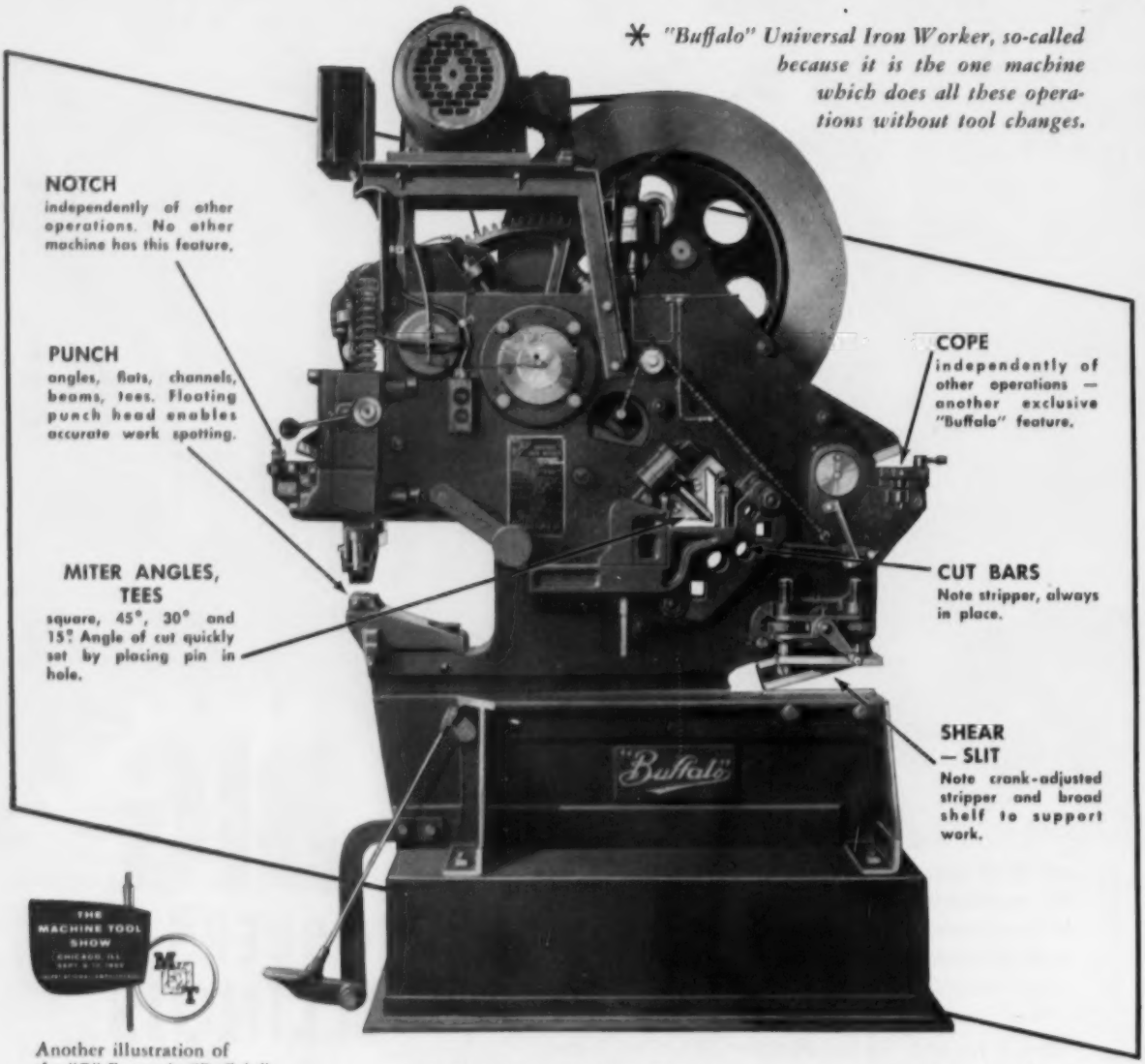
Gears for Every Purpose ... one gear or 10,000 or more

ILLINOIS GEAR & MACHINE COMPANY

2108 NORTH NATCHEZ AVENUE • CHICAGO 35, ILLINOIS

YOU CAN DO MORE JOBS IN LESS TIME — WITH A U.I.W.*

* *"Buffalo" Universal Iron Worker, so-called because it is the one machine which does all these operations without tool changes.*


NOTCH
independently of other operations. No other machine has this feature.
PUNCH
angles, flats, channels, beams, tees. Floating punch head enables accurate work spotting.
MITER ANGLES, TEES
square, 45°, 30° and 15°. Angle of cut quickly set by placing pin in hole.
COPE
independently of other operations — another exclusive "Buffalo" feature.
CUT BARS
Note stripper, always in place.
SHEAR — SLIT
Note crank-adjusted stripper and broad shelf to support work.
Buffalo

Another illustration of the "Q" Factor in "Buffalo" machines—*the built-in Quality which provides trouble-free satisfaction and long life.*

A Universal Iron Worker will save space — time — excessive conveying of work from machine to machine in your shop — because it does so many jobs. Often called the "most useful machine in the shop". For complete details, write for Bulletin 360.

BUFFALO FORGE COMPANY

492 BROADWAY BUFFALO, NEW YORK

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

DRILLING • PUNCHING • SHEARING • BENDING

CONTINUOUS BAR MILL

Designed and Built by

UNITED

Designers and Builders of Ferrous and Nonferrous Rolling Mills, Mill Rolls, Auxiliary Mill and Processing Equipment, Presses, and other Heavy Machinery. Manufacturers of Iron, Nodular Iron and Steel Castings, and Weldments.

UNITED ENGINEERING AND FOUNDRY COMPANY

PITTSBURGH, PENNSYLVANIA

Plants at: PITTSBURGH • VANDERGRIFT • YOUNGSTOWN • CANTON
WILMINGTON (LOBDELL UNITED DIVISION)

Subsidiaries: ADAMSON UNITED COMPANY, AKRON, OHIO
STEDMAN FOUNDRY AND MACHINE CO., INC., AURORA, INDIANA

UNITED *can serve you no matter where in the world you are*

Now you can make WELDED TUBES

faster, better, at lower cost, from—

STEEL

STAINLESS

BRASS

COPPER ALLOY

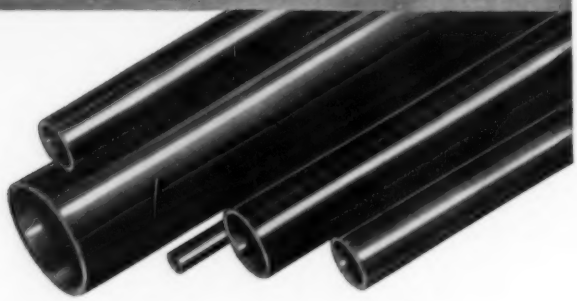
ALUMINUM

MAGNESIUM

NICKEL

INCONEL

MONEL



Within the last few years rapid strides have been made by Yoder in widening the scope and raising the speed of cold process electric-weld pipe and tube making. In tube mills perfected by Yoder many non-ferrous metals can be induction-welded in gauges up to .154″ and at speeds approaching those attained in resistance welding steel tubes.

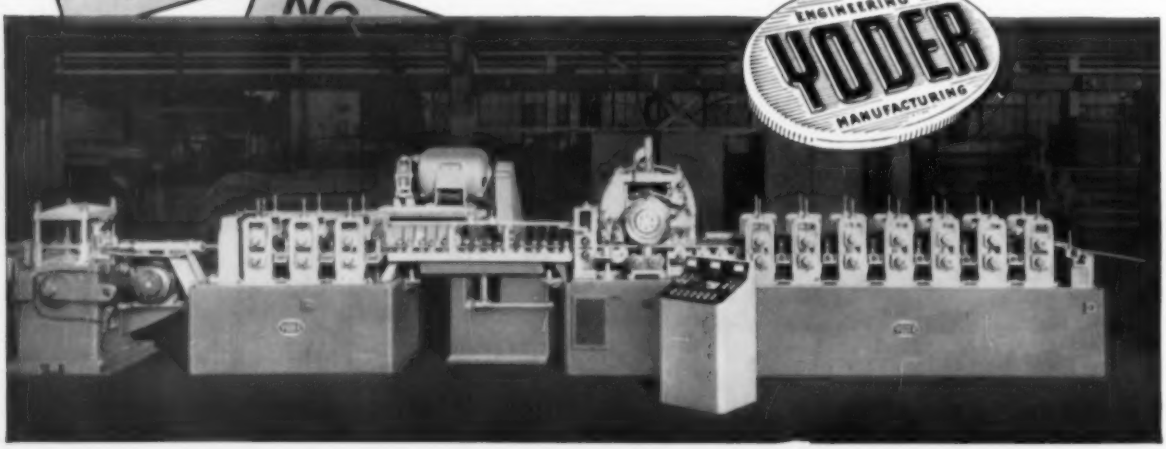
Further, speeds up to 250 fpm are reached in induction-welding steel tubing in the same gauges.

New, compact Yoder "4-in-1" Welding Transformer is the last word in resistance-welding steel pipe and tubing in sizes up to 24″ diameter.

More specific information, literature and estimates on request, without obligation on your part.

THE YODER COMPANY

5510 Walworth Ave. • Cleveland 2, Ohio



Report To Management

All Graphs Point Up

The economy has passed through its recovery cycle. It's now in the modified boom stage. This isn't news—all you have to do is read the paper or check your own firm's sales and order records to prove it. But there's no doubt the amazing strength of the pickup has surprised the economic experts, businessmen and politicians.

Answer to what's causing the upturn is really very simple—it's the man in the street, his wife and his kids. They're pushing 1955 toward record prosperity levels. Their confidence in the economy is the big news behind the boomlet.

Even during the recession consumers were optimistic when most business executives, politicians and economic forecasters were "viewing with alarm." It was mainly this factor which prevented the mild recession from developing into a really severe slump. But there is no doubt all the depression talk a year ago did have some dampening effect on consumer optimism.

Now, however, with even business leaders talking about our being on the "thresholds of the greatest prosperity in the history of the U. S.," the consumer feels he can really go all out. We're making more money—wage rates, workweek, overtime are all up. And this represents a real increase in purchasing power because prices are remarkably steady.

The effects of the current surge of the economy are showing up in the form of record auto sales, a near all-time high rate of 1.4 million housing starts which can't be attributed entirely to nothing-down lifetime-to-pay financing arrangements. Also appliance makers expect a best-ever sale level this year; farm equipment is firming and there's been a pickup in leisure time spending—particularly long distance and overseas airline travel.

We're in a Restrained Boom

What it all means is that in less than a year we've gone from recession, to recovery, to a restrained boom. Last year the economy slipped below its expected growth rate—it's now more than making up the loss.

And you can figure we're in for an all-stops-out boom if the $101 billion highway program gets the go ahead and if defense expenditures for the U. S. and our allies exceed budget estimates—as seems highly likely.

Never Had It So Good——Almost

Backing up the feeling that a real boom may be in the offing is the March report of the National Assn. of Purchasing Agents. New order increases were reported by 53 pct of the PA's, 50 pct said production was up over a month ago. This is the most glowing report turned in by NAPA since 1950.

Expansion planning continues to defy earlier predictions that this would be a soft spot during '55. Nine pct of the purchasing agents said their firms have boosted original capital expenditure plans, none reported a cutback. Also the number expecting to spend more this year than last outstrips the number expecting to spend less by a better than 2-1 ratio.

Top purchasing men are now talking about adding to inventories—a trend that has not been evident for a long time. Only trouble is they will undoubtedly find it difficult to add to stocks on many items—particularly steel, copper, aluminum. Buying policy is also becoming slightly less conservative with an increasing number of purchasing agents indicating a greater willingness to buy farther in the future. There's no doubt the boom gears are well oiled.

INDUSTRIAL BRIEFS

All Assets . . . Mid-States Welder Mfg. Co., Chicago, has acquired all assets of Viking Welding Sales Co., Kalamazoo. This adds three types of welders to the Mid-States line; AC transformer to 500 amp; inert gas ac in 200 and 300 amp; and dc rectifier in 2, 3 and 400 amp capacities.

Memorial Medal . . . Ross L. Gilmore, president, Superior Steel & Malleable Castings Co., was recently awarded the Lorenz Memorial Gold Medal by the Steel Founders' Society of America. The award is made annually by a vote of the Society's membership.

STAMPINGS
for the FINISHED PRODUCT

SEE SESSIONS . . . for Metal Specialties, Box & Case Hardware, Stamped Assemblies in a wide range of finishes.

J. H. SESSIONS & SON

290 RIVERSIDE AVENUE • BRISTOL, CONN.

Construction . . . Warehouse and sales offices at Birmingham for Union Wire Rope Corp., Kansas City, are scheduled for completion in April. James Lester will head the branch.

New Acquisition . . . Directors of Firth Sterling Inc., Pittsburgh, recently authorized the issuance of sufficient capital shares of Firth Sterling stock to acquire the assets of the Houston Carbide Corp., Houston.

Anniversary . . . Snyder Tool & Engineering Co. is celebrating its 30th year in business. The company is a supplier of automation machine tools to the automotive, metalworking and allied industries.

Made A Buy . . . Purchase of the complete line of Rockwell (Delta - Milwaukee) Hydraulic Drill Units from Rockwell Mfg. Co., Pittsburgh, by Hartford Special Machinery Co., Hartford, was recently announced by both companies.

Western Representative . . . Ernst Machinery Co. will represent Leland-Gifford Co., exclusively in western Missouri and Kansas.

Merger . . . Inland Steel Co., has acquired Arthur C. Harvey Co., and will merge that business with the operations of Joseph T. Ryerson & Son, Inc., in the New England area.

New Area . . . Mueller Brass Co., has opened a new warehouse at 2341 LaSalle St., in St. Louis, to serve Missouri, Illinois, Tennessee, Kentucky and Arkansas.

Summer Session . . . The Metal Processing Div., Department of Mechanical Engineering, Massachusetts Institute of Technology is offering a summer program in the general field of Metal Cutting and Lubrication, for 2 weeks starting June 27.

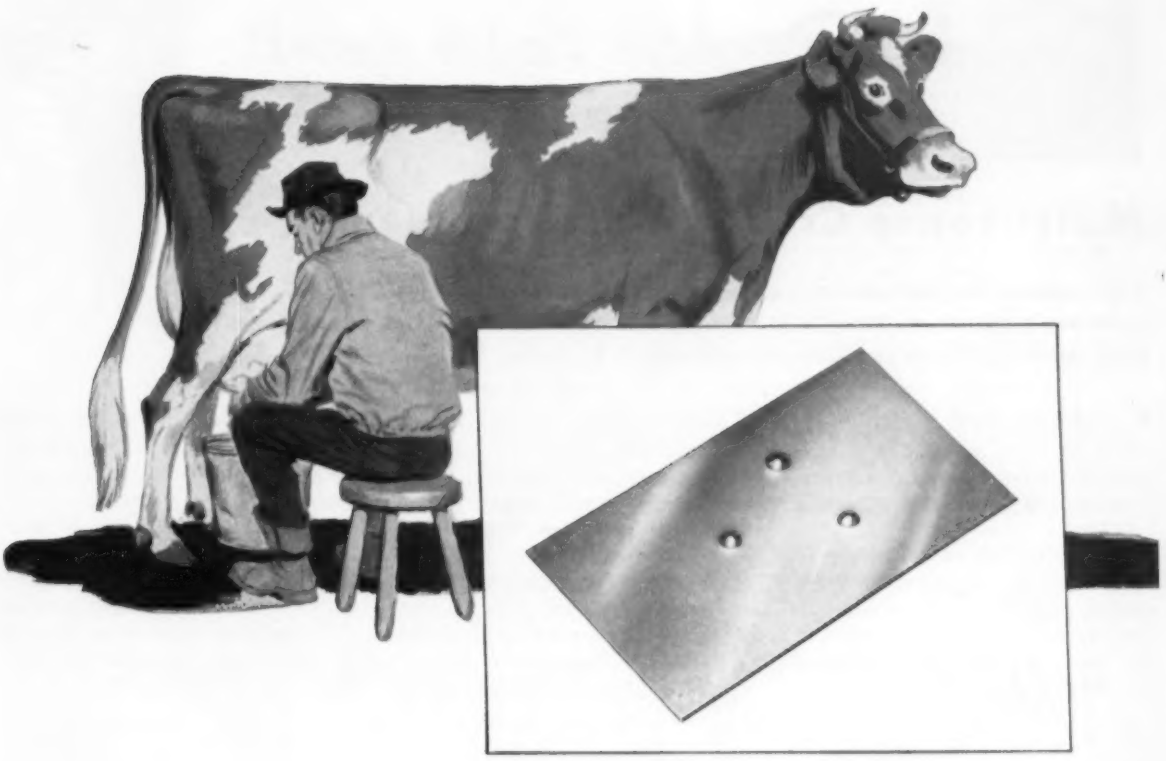
Pittsburgh Distributor . . . Davis Engineering Co., has appointed Dravo Corp., their exclusive distributors of their Paracoil heat transfer equipment.

Centennial Celebration . . . Soo Locks, which handles shipping comparable to the Suez and Panama Canals combined — was opened recently with the prediction that the next 25 or 30 years will see as much tonnage floated through the locks as in the first 100 years of their existence. Celebration of Soo's Centennial will continue through the summer and will include the dedication of the MacArthur Lock.

New Offices . . . Jervis B. Webb Co., have moved to 9301 Rayo Ave., South Gate, Calif. Manufacturing area was also enlarged.

Outstanding . . . Dr. M. Eugene Merchant, assistant director of Research, Cincinnati Milling Machine Co., recently received the 6th Annual Outstanding Engineer Award, presented by the Technical and Scientific Societies Council of Cincinnati.

Solar Subsidiary . . . Sugg Solar has been formed as a subsidiary of William Sugg & Co., London, Eng., to manufacture in England the American Solar Aircraft Co.'s Mars 40-60-h.p. gas-turbine engines.



The bumper mount and the 3-legged stool

A case history of interest to any manufacturer who uses flat-rolled steel.

A little piece of steel like that shown above serves as an automobile bumper mount. Originally, this mount was to be projection-welded to the bumper at each of four points. But during the welding process, at the supplying manufacturer's plant, one point of the mount either refused to take the weld, or it broke easily under strain.

Time was running out. Production lagged and costs skyrocketed. And then a Great Lakes Steel Technical Service Representative was called in. He discovered that, regardless of how flat the rectangular mounting might be, it was virtually impossible to get a strong projection weld at all four corners. But when he eliminated one weld, the plate snuggled into the bumper and made perfect contact on three points—just like a three-legged stool! Three welds were actually stronger than four.

Solving problems is a tradition at Great Lakes Steel. As specialists in flat-rolled products, Great Lakes has had to come up with the right answers to problems in many fields. It will pay you to take advantage of this reservoir of experience next time you have a problem that concerns flat-rolled steel.

GREAT LAKES STEEL CORPORATION
Ecorse, Detroit 29, Mich. • A Unit of
NATIONAL STEEL CORPORATION

PRODUCER OF NAX

SALES OFFICES IN BOSTON, CHICAGO, CINCINNATI, CLEVELAND, HOUSTON, INDIANAPOLIS, LANSING, LOS ANGELES, NEW YORK, PHILADELPHIA, PITTSBURGH, ROCHESTER, ST. LOUIS, SAN FRANCISCO AND TORONTO

AUTOMOTIVE ASSEMBLY LINE

Multi-tones Create Multi-problems

Color options frustrate dealers . . . Too many choices result in inventory problem . . . Many dealers make own two-tones . . . Wire wheels fade from scene . . . Dream car ideas adopted—*By T. L. Carry.*

◆ DEMAND FOR multi - toned color combinations on new cars is presently near 40 pct and automotive sources claim that it is still climbing.

More than 160 color options in hundreds of combinations are available on this year's models. A tremendous production problem is involved when the available colors are considered along with the various body styles the auto companies are offering the public this year.

Ford Motor Co. reports that it can't keep its production up to the demand for cars painted in two tones. One of its factories can only produce five two-tone cars out of a total of 350 being made there daily. Ford claims that almost 50 pct of the cars they produce are in two-tone paint combinations. But in addition to the production problems involved, the demand for two-tone cars has also created a sales problem.

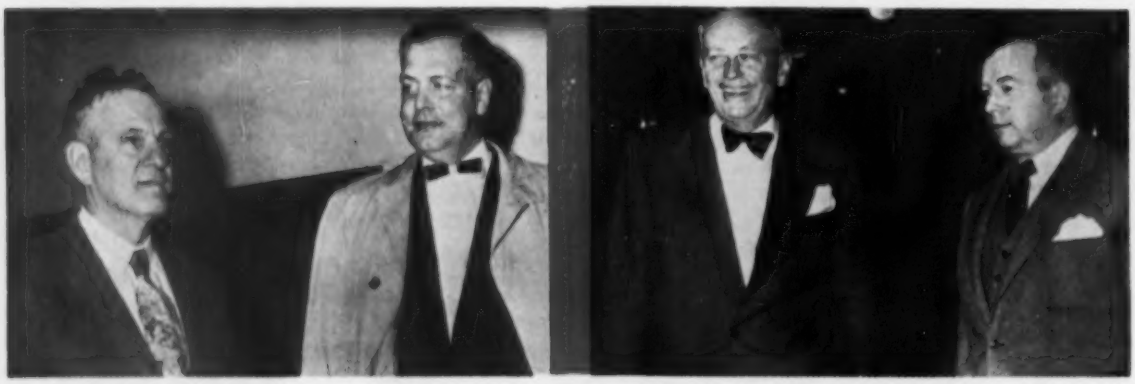
Dealers Repaint . . . Because of the hundreds of colors in which a given car is now available, dealers find that it is extremely uneconomical to carry cars with all the color combinations a customer might desire. To meet the demand, most dealers in the Detroit area are using their own paint facilities and repainting cars from the factory in colors his customers specify.

Automakers report that dealers will order cars from the factory in solid colors and repaint them in two tones so that the exterior of the car will not clash with the interior trim. For example, a solid red color car would be painted half black but the black would still blend well with the red interior.

Dealers find that this system makes it possible for them to stock fewer cars and enables them to take cars from the factory in almost any color. In addition, the cost of repainting is no more than would be charged at the factory level. Also, some dealers claim the quality of the repainting in some cases is better than the job done at the factory. The reason for this is the amount of painting done by a dealer is much smaller. And because a dealer wants to satisfy his customers, he will make sure that the job is done properly.

Wire Wheels Go . . . The market for wire wheels—which never was very big since they were reintroduced two years ago—has fallen off even more sharply this year since tubeless tires were made standard equipment on new model cars. At first, the demand for wire wheels was low because of the prohibitive cost. Consumers were highly interested until a price was quoted. Today the demand is still lower because tubeless tires cannot be fitted to wire wheels.

The construction of the wheel



BATTERIES in labor's World Series: Representing the UAW-CIO in preliminary talks are, left, John W. Livingston, director of the UAW's General Motors Dept., and E. S. Patterson. For GM, right, are H. W. Anderson, vice-president, personnel, and L. G. Seaton, director of labor relations.

Here's a bolt whose weakness is its strength!

Making a bolt that fails precisely when it should requires specialized manufacturing skills.

This is the job New Holland Machine Company, farm equipment manufacturers, turned over to RB&W. The bolt is used on the flywheel of a New Holland baler. "Critical" is a weak word for its importance to the baler.

If the baler picks up a foreign object such as a rock or stone, this bolt *must* snap to prevent gear breakage. But it can't fail too soon—when the baler eats up extra-heavy windrows, for example. If it failed every time this happened, the farmer would spend all day replacing bolts — instead of making hay.

RB&W worked hand-in-glove with New Holland engineers in the tough job of heat-treating a standard machine bolt to these exacting specifications. It took a lot of ingenuity — but paid off. You can expect the same kind of service, cooperation and end product when you drop your fastener problem in our hopper. RUSSELL, BURDSALL & WARD BOLT AND NUT CO., Port Chester, N.Y.

UP TO TWELVE TONS OF HAY AN HOUR is the capacity of New Holland's Super 77 power take-off baler. With every minute vital in harvesting, farmers can't take chances on machinery failure — so New Holland built rugged parts into the Super 77, gave it extra-large capacity for fast, reliable operation.

RB&W **RUSSELL, BURDSALL & WARD**

110 YEARS MAKING STRONG THE THINGS THAT MAKE AMERICA STRONG

Plants at: **PORT CHESTER, N.Y.; CORAOPOLIS, PA.; ROCK FALLS, ILL.; LOS ANGELES, CALIF.** ***Additional sales offices at:*** **ARDMORE (PHILA.), PA.; PITTSBURGH; DETROIT; CHICAGO; DALLAS; SAN FRANCISCO.** ***Sales agents at:*** **NEW ORLEANS, DENVER, SEATTLE.** ***Distributors from coast to coast.***

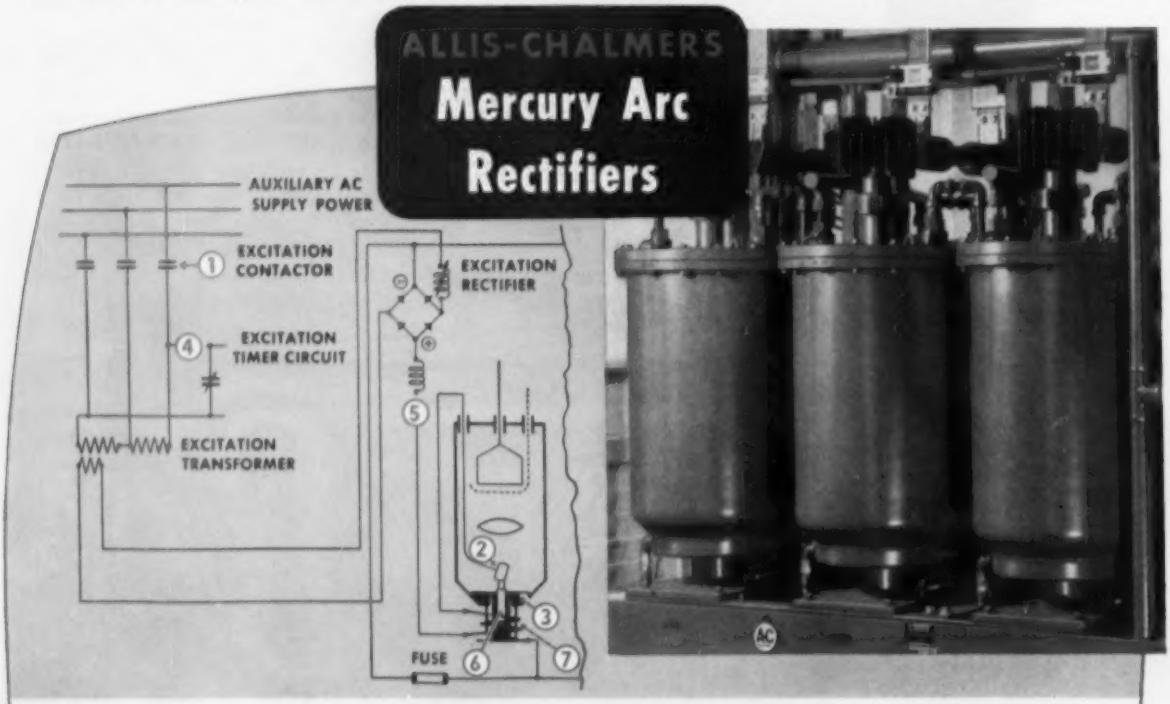
For Reliable Rectifier Operation Get

Continuous Excitation

Allis-Chalmers excitron rectifiers eliminate the need for a pulse-type firing system timed for operation every cycle. Maintenance is easy because of the simplicity of design.

A small dc excitation arc is automatically ignited only once, when the unit is started, and then maintained on the mercury cathode of each rectifier tube. It offers advantages similar to a pilot light. Since it is far easier to maintain an arc than to start it, this feature makes the excitron far less likely to lose excitation during power supply disturbances than other types of rectifiers.

Get all the facts about excitron rectifiers before your next installation. Call the A-C office nearest you or write Allis-Chalmers, Milwaukee 1, Wisconsin.



Supply of DC Provides Key to Continuous Excitation

Direct current supplied from excitation rectifiers is the key to continuous excitation. When the excitation system is energized by means of a contactor (1), positive dc potential appears on the excitation anode (2) of each tube, negative at the cathode (3). A timer (4), through contacts of the excitation failure relay (5), is energized at the same time.

As soon as voltage is applied, current flows from the anode to the cathode through the ignition plunger (6). This current energizes the ignition coil (7) and causes the plunger to be pulled below the mercury surface. As the plunger travels down, an arc is drawn which transfers from the graphite tip of the plunger to the mercury. This current flow keeps the coil energized, maintaining a continuous arc.

If excitation failure should occur while the rectifier is carrying load, the plunger is released, floating upward in the mercury until it makes contact with the anode, then repeating the process above until the arc is re-established.

Re-establishment of the arc as outlined takes less than a second — it does not interfere with normal operation.

ALLIS-CHALMERS

A-4592

Automotive Production

(U. S. and Canada Combined)

WEEK ENDING	CARS	TRUCKS
Mar. 26, 1955	188,153	28,624
Mar. 19, 1955	186,066	26,710
Mar. 27, 1954	125,341	24,245
Mar. 20, 1954	130,295	24,600

*Estimated. Source: *Ward's Reports*

itself would create leaks in the tire. Air would pass through the holes in the wheel where the wire spokes are attached. Welded wheels would stop air leaks, but if the wheel ever became warped, it could not be repaired. Other factors that have made wire wheels unpopular are the noise they make from the wind and fatigue failure. In the latter case, a spoke sometimes develops a soft spot and breaks.

The Cadillac Div. of General Motors has abandoned the use of wire wheels this year in favor of a forged aluminum wheel which still gives a spoke effect. The wheel is designed along the lines of the old wooden spoke wheel Cadillac used in the 1930's but the area between the hub and the rim is smaller. Tubeless tires, standard equipment on all Cadillacs, can be fitted to this wheel. Cadillac also says that the forged wheel eliminates the possibility of fatigue failure.

Buick is the only GM division which is offering wire wheels as optional equipment on its cars this year and they report that the demand is very low.

Add Automatic Dimmer

An automatic headlight dimmer that adjusts itself to various driving conditions is now available on 1955 Lincolns and Mercurys. The dimmer lowers the beam thrown by a car's headlights when they are within 1,000 ft of an oncoming car.

Designed by the electrical engineering department of the Ford Motor Co., the dimmer operates electronically from a power supply mounted in the engine compartment and sealed in a metal container. A sensing head located on top of the instrument panel on the left side of the car contains a lens which concentrates the maximum amount of light on a photomultiplier tube.

The dimmer is operated by a sensitivity control that is set at a predetermined distance.

Dream Cars:

Many dream features are today's reality

Although the general public may not be aware of the fact, the auto industry has found that building dream cars is a practical way of developing styling ideas for its future models. The history of the dream car goes back to the 1930's when Edsel Ford built a special car with a new design. It later became known as the Lincoln Continental. In 1940, Buick developed a car in which the front fender was molded into the door. This practice later became almost universal.

For a preview of what is to come in new styling, study the dream cars for ideas. In a great many cases many of the features of present day cars have been adopted from them.

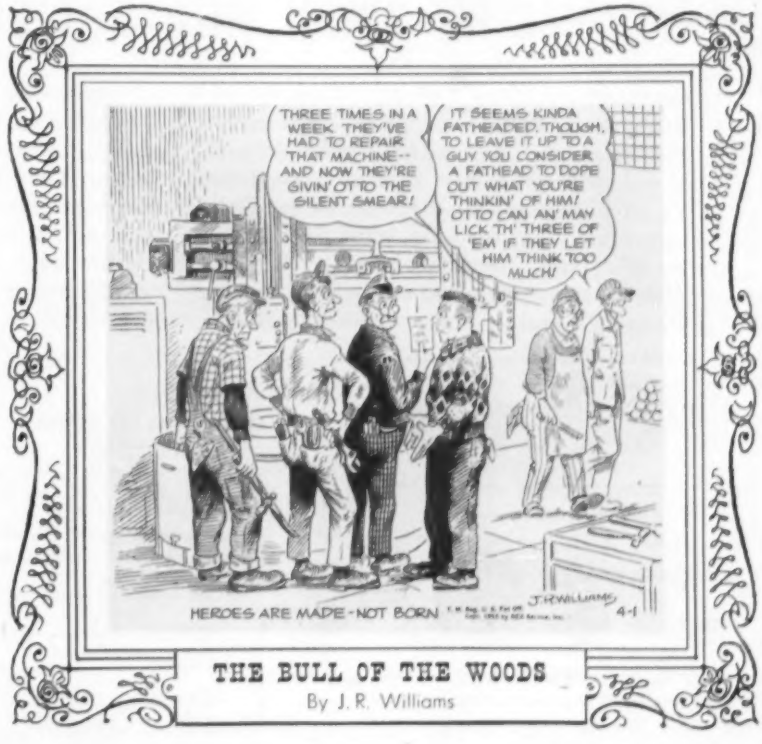
AUTOMOTIVE NEWS

All Do It . . . The public may have forgotten GM's famous Le Sabre, introduced several years ago, but the auto industry has not. Le Sabre never went into production but some of its designing features have been offered to the public. Cadillac, for example, adopted the grille. The car also influenced the Buick hardtop fender design and wrap-around windshields are now in universal use.

Chrysler had a unique paint scheme covering the hood of its experimental K-310. This has been adopted in the 1955 Chrysler Imperial.

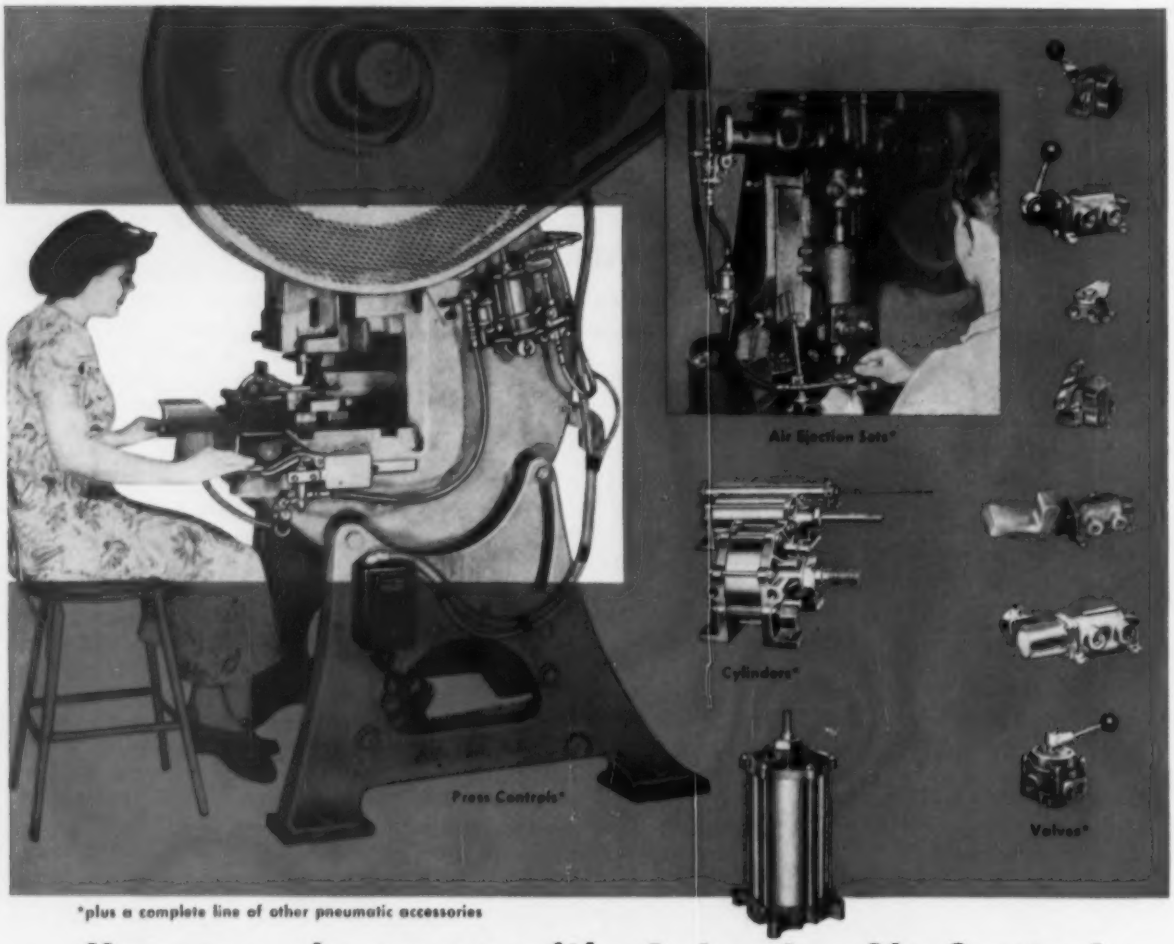
The 1955 Ford tail-light design was adopted from the company's X-100. The crown over the roof of this model is now a standard feature in the Ford Crown Victoria.

The 1955 Mercury adopted some of the features from Ford's X-500 —notably the tail-light design, and the headlights on the current models. Even the little Thunderbird copied one of the X-500's features by putting the power dome on its hood with good results.


THREE TIMES IN A WEEK THEY'VE HAD TO REPAIR THAT MACHINE-- AND NOW THEY'RE GIVIN' OTTO THE SILENT SMEAR!
IT SEEMS KINDA FATHEADED, THOUGH, TO LEAVE IT UP TO A GUY YOU CONSIDER A FATHEAD TO DOPE OUT WHAT YOU'RE THINKIN' OF HIM! OTTO CAN AN' MAY LICK TH' THREE OF 'EM IF THEY LET HIM THINK TOO MUCH!
HEROES ARE MADE-NOT BORN
J.R.WILLIAMS
4-1

THE BULL OF THE WOODS

By J. R. Williams



*plus a complete line of other pneumatic accessories

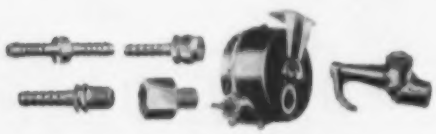
Harness air power with Schrader Air Control

On many machines, Schrader Control Sets will actually double your production by replacing tedious, time-wasting manual operations with swift, safe, sure movement by air. In other locations, Schrader Valves, Cylinders and other Air Line Accessories lift... lower... pull... push... clamp... clean off. They do many things so easily and quickly that you'll find it hard to believe you did without them before.

Take a look around your plant—keeping in mind where air power could do the job better. Then let us help you develop your ideas into neat, efficient air line hookups that will pay for themselves over and over again the first year. For specific information, write —or, if you prefer, fill out the convenient coupon below.

Schrader
REG. U. S. PAT. OFF.

LEADERS IN AIR CONTROL SINCE 1844



The complete Schrader line of pneumatic accessories includes everything you need

A. Schrader's Son
Division of Scovill Manufacturing Company, Incorporated
470 Vanderbilt Avenue, Brooklyn 38, N. Y., Dept. J-3

I am interested in more information on_____

Name_____ Title_____

Company_____

Address_____

THIS WEEK IN WASHINGTON

Business Balks at New Control Bid

SEC wants companies to report finances twice a year . . . Industry spokesmen tell Congress short term figures would give distorted picture in many cases . . . See no peacetime adoption—By G. H. Baker.

◆ CONTROL - MINDED bureaucrats and some investment counselors are insisting that all incorporated businesses be forced to file semi-annual financial reports, but an unofficial check of Capitol opinion shows that Congress isn't sold on the idea.

The Securities & Exchange Commission is eager to take over more ground in regulating corporation finance. It wants authority to demand semi-annual reports because it has decided it wants to look over the earnings records of companies "more frequently than annually."

Many company executives are protesting the SEC bid for power in the stock market hearings now going on. They point out that semi-annual reports would not present investors with an accurate picture of a company's financial position.

There are too many financial uncertainties to be calculated, and the seasonal industries in particular would be at a disadvantage in presenting semi-annual reports. In wartime, quarterly reports were required. Short of an emergency period, however, the semi-annual inspection is not likely to win approval.

SBA Won't Die . . . Longer life is in store for Small Business Administration, technically scheduled to expire next June 30. In addition, the agency may be given a new, higher limit on its loan authority.

Congress is giving an attentive ear to the SBA plea that it be kept in business to help small companies get a fair share of government contracts and to aid them with direct and participation loans.

SBA Chief Barnes did not call for a higher loan limit in his recent appearance before the Senate Small Business committee. Instead, he testified that several loans in excess of $150,000 have been made, for the statutory ceiling applies only to the government share of a loan.

Sen. Sparkman, D., Ala., the committee chairman, hasn't given up his idea that the SBA loan limit should be jumped to $500,000 (THE IRON AGE, Feb. 24, p. 61). However, he and his colleagues may have to accept a compromise, with the result that the new limit may be set at about $250,000.

Agency Yields Power . . . Office of Defense Mobilization is preparing to reverse the usual government agency practice by voluntarily disposing of some of its authority. Even so, the agency probably will insure that it can retrieve anything it gives up today.

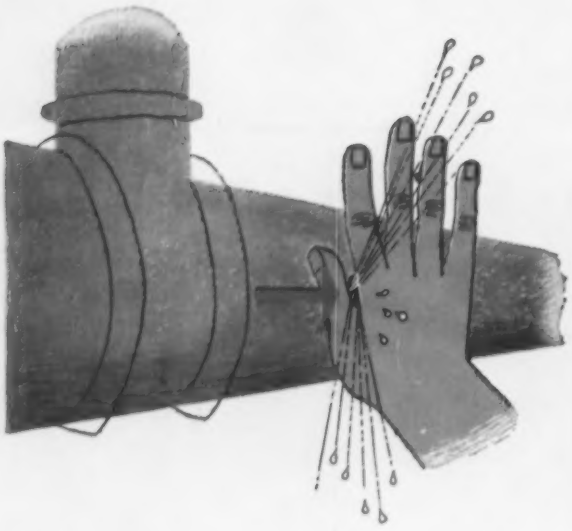
"Dig that crazy beat!"

SEN. Homer Capehart, left, talks stock market with elder statesman Bernard M. Baruch.

A plan is taking shape to farm out the ODM job of making final decisions on industry applications for fast tax write-off benefits. Commerce and Interior Depts., Defense Transport Administration, and perhaps three other agencies will be given this responsibility.

These agencies now recommend to ODM for approval those requests coming within their jurisdiction. For example, Interior Dept. reviews and sends along applications related to power line expansion. DTA handles a similar task where expansion of transportation and terminal facilities is proposed.

Under the new plan, the recommending agencies will be able to take final action, awarding write-



a hole here means trouble...

a hole here saves trouble

Crucible Hollow Tool Steel Bars are a great trouble-saver for the metalworking industry. For they eliminate costly, time-consuming drilling, boring, cutting-off or rough-facing operations. And you save production time, machine capacity, and avoid scrap losses . . . for the hole is already in the steel you buy.

Crucible Hollow Tool Steel Bars are now available in any of our famous tool steel grades . . . in almost any combination of O.D. and I.D. sizes. And you get *immediate* delivery of five popular grades — KETOS oil-hardening, SANDERSON water-hardening, AIRDI 150 high-carbon high-chromium, AIRKOOL air-hardening, and NU DIE V hot-work tool steels.

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CRUCIBLE first name in special purpose steels

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off benefits in line with terms described by ODM. Bulk of the new work will go to Commerce Dept., where Business and Defense Services Administration will take over the job.

ODM is unlikely to lose entirely its decisive voice in the write-off field when its plan takes effect. The agency may provide itself with the power to veto any decision it deems unjustified.

Ask U. S. to Buy . . . Tungsten industry spokesmen are hoisting distress signals before Congress, although their output is being bought systematically with government funds.

What troubles the producers is the prospect of an end, possibly late next year, to the federal buying program. Because there is no private business market for domestic production, they want assurances that the government will continue its purchases indefinitely. They also call for a boost in import duties on foreign tungsten.

The industry sees its problem this way: Government price to domestic suppliers is $63 per unit of contained tungsten. American consumers, with access to foreign sources, won't pay that price. If the federal buying program ends, U. S. producers won't be able to match foreign competition and most domestic mines will close.

Can't Call Boss Liar

Company executives are within their rights in firing employes who make public attacks against their honesty, a new federal court decision emphasizes.

Fifth Circuit Court of Appeals holds that employes who charge during a union campaign that a company officer is a liar are exceeding the limits of legitimate campaign activity and therefore may be fired.

This ruling reverses a National Labor Relations Board decision involving Blue Bell, Inc., clothing manufacturers of Natchez, Miss. An unfair labor practice charge was brought by union officials after the company fired two employes who circulated a pre-election letter calling the firm's vice-president a liar.

Though the union lost the election, it had the result set aside for alleged interference and filed charges against Blue Bell. NLRB held that issuance of the letter was within bounds of campaigning rules and ordered the employes rehired.

The circuit court denies that the NLRB judgment is valid and maintains that the employer was given just cause for firing the workers.

Renegotiation:

May prosecute contractors who omit finance report.

Some 8,000 prime contractors and subcontractors for the government are risking prosecution for failure to file financial reports with the Federal Renegotiation Board.

Frank L. Roberts, chairman of the Board, is discussing legal action against the firms with Justice Dept. attorneys now, according to his testimony before the House Appropriations Committee.

Some of the firms have failed to file required financial reports for government contracts since 1951, Mr. Roberts says. Many of them, he believes, are subcontractors or firms doing less than the statutory $500,000 in government business required before the contracts are subject to renegotiation.

All Must File

But, the chairman points out, all firms doing any government business are required to file financial statements, even though they may not be subject to renegotiation.

"Never mind the tonic—I hate that slick, patent leather look."

All the violations, he adds, may not be willful.

Some $175 billion worth of government contracts have been let since the Renegotiation Board was formed in 1951. Of this, $240 million has been declared excessive profits and returned to the government at a cost of $14 million, the chairman says. Of the contracts renegotiated, only about 15 pct are contested, and only a fraction of 1 pct are taken into the tax courts, he adds. In 1954, one thousand firms paid back $130 million in excessive profits.

The Renegotiation Act was originally set to expire Dec. 31, 1953, but was extended until the end of 1954. Congress is now considering proposals to extend the act for another one, two or three years. Whatever happens the board won't disband until backlog of 3656 cases are handled.

Steelmaker Sees Prosperity

Benjamin F. Fairless, chairman of the board, U. S. Steel, gave a vigorous vote of confidence in the future during his appearance before the Senate Banking committee investigating stock market practices. Said Mr. Fairless:

"I think we are on the threshold of one of the greatest periods of prosperity this nation has ever seen."

Pay Hits Peak

Labor Dept. reports net spendable weekly earnings of factory workers in February totaled $69.17 for a worker with three dependents and $61.91 for a worker with no dependents. These figures are 76¢ higher than a month earlier for both categories, and about 55¢ higher than the previous peak reached last December.

In 1954, take-home pay was up $2.87 a week for the worker with three dependents and $2.82 for a worker with no dependents. A longer factory work-week, a 5¢-an-hour average pay raise, and a 10 pct cut in income taxes, contributed to the increase.

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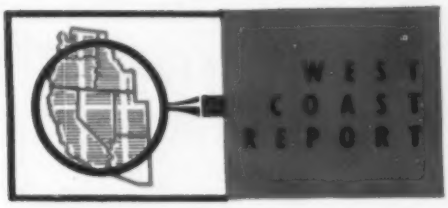


New Industry Looks to Northwest

Lumberjacks drop axes, pick up wrenches . . . Diversified industry moves into Northwest . . . Portland employs 21,000 metalworkers in 566 plants . . . Good opportunity for nonferrous expansion—By *R. R. Kay.*

◆ BIG SAWMILLS are disappearing from the Portland, Ore., area, and metalworking has really dug itself into first place in the industrial picture. A bigger, more diversified metalworking industry is steadily developing here.

Portland metropolitan area's economy, long ruled by lumber and food-processing industries, woke up during this past decade to the opportunities in primary metals and metal fabrication. In fact, metalworking tops the lumber industry as the number one employer.

Some 566 metalworking plants in the Portland metropolitan area employ 21,000 workers. They break down into 710 product categories: primary metal industries, 56; job shop metalworking industries, 303; fabricated metal products, 121; machinery (except electrical), 120; electrical machinery, 54; transportation equipment, 56.

Wide Variety . . . Portland has long been a leading producer of trucks and trailers for the logging and timber industry, sawmill and lumber machinery, lift trucks and carriers, blower systems, and hydraulic cylinders.

An on-the-spot look at the Portland area today shows there is an impressive variety of products, including mechanics' hand tools, heating apparatus, iron and steel foundry products, woodworking machinery, centrifugal pumps, irrigation systems, aluminum shingles, electronic devices, shipbuilding and repair.

Primary aluminum is produced, and there are a number of nonferrous foundries and other plants manufacturing aluminum, brass, and copper products. Opportunities abound for further expansion in the nonferrous metals industry.

New plants in neighboring Salem and Oregon City are fortifying the area's position as the largest producer of electric storage batteries in the Pacific Northwest.

Farm Market . . . All this doesn't mean that Oregon's lumber and food processing industries will be replaced by metalworking. Quite the contrary. Research on new uses for wood and waste is developing new products — hardboard, wallboard, kraft paper—all of which will require special machinery. Expanding pulp and paper industries will need more machinery, too.

Things look very good for an upsurge in agricultural machinery production. Opening of the Columbia Basin irrigation project and more intensive cultivation of specialized crops in the Willamette Valley will beef up demand for farming implements, irrigation equipment, and specialized harvesting machinery.

In Portland area Electric Steel Foundry Co. is spending $175,000 on a new three-story laboratory. Open for business are Nichols Tool & Die Co., Oregon Industrial Instruments Co., and Serv-U-Bread Corp., manufacturer of coin-operated bread-dispensing machines.

PLASTIC TENT is used to control atmosphere in welding titanium components at a plant of Solar Aircraft Co. Zippered tent excludes air which tends to make titanium brittle. Welder wears rubber gloves sealed to bag.

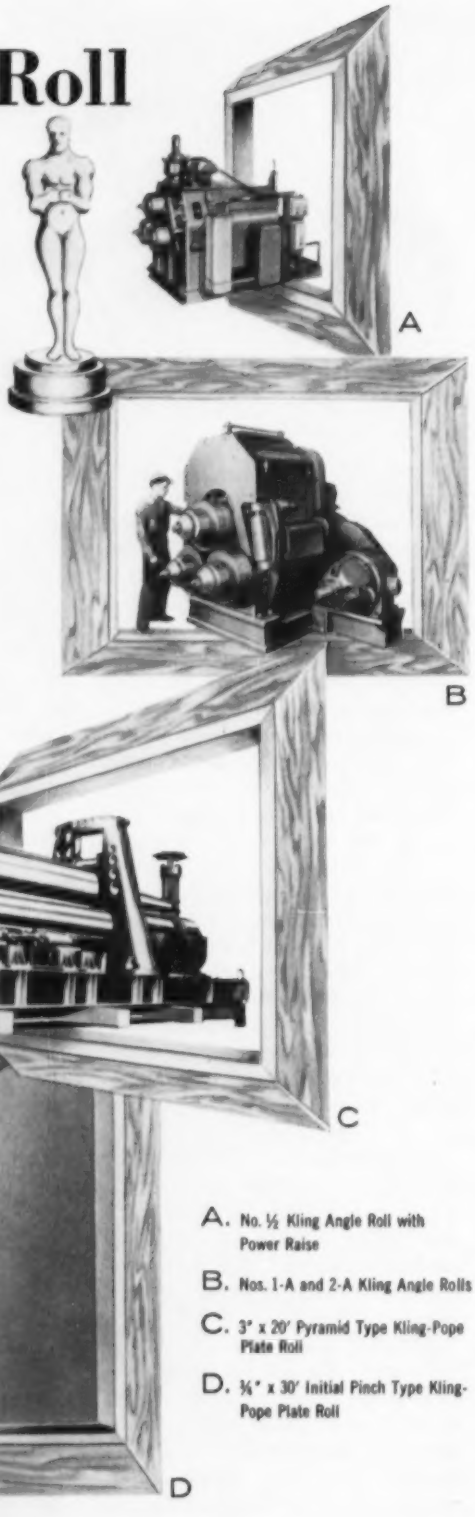
From Airplane Wing Skins to Structural Shapes

No Matter What You Roll

you're sure to win "PRODUCTION OSCARS" with Kling ANGLE or PLATE ROLLS

You can duplicate the happy experience of Douglas Aircraft Co., Inc. with Kling-Pope Plate Rolls; and of Commercial Tank & Welding Co. with Kling Angle Rolls. These are only two of the many plants that have captured coveted "Production Oscars" for performance records on diverse jobs with Kling Rolls.

Kling's sixty-three year engineering and production experience —always at your service—is concentrated into all the many Kling Metal Fabricating Machines. Send for bulletins on the specific machines in which you are interested or New Complete Line Folder.



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MACHINE TOOL HIGH SPOTS

Early Signs Point To Good Year

February returns show machine tool gains in orders, shipments and backlogs . . . See slow deliveries spurring tardy buyers to get orders in . . . Too soon to predict full upswing—By *E. J. Egan, Jr.*

◆ MACHINE tool builders are cautiously trying on a new idea for size: business for 1955 might not be so bad after all. Fact is that their industry chalked up February gains in three important categories: new orders, shipments and backlogs.

National Machine Tool Builders Assn. estimates February's new orders for metal cutting tools at 209.7 on its index scale. This is equivalent to $62 million in volume, gives the industry its best sales month since September, 1953.

And NMTBA's preliminary shipment index for February moved up slightly to 168.2 from January's 42-month low of 167.3. Dollarwise, this means that February shipments totaled about $49.75 million compared with $49.5 million in January. Fact that there was a shipment gain at all is much more important to builders than the quarter-million dollar increase.

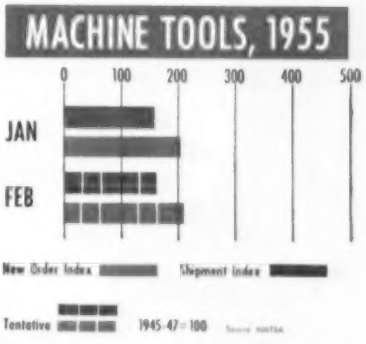
Boost Backlog . . . Association statisticians also rate the industry's end-of-February backlog at about 4.2 months. This is a half-month gain over the January cushion of unfilled orders, makes for stable output and jobs.

Backlogs are important psychologically to the machine tool business cycle. There are always some prospective customers who hold off purchases until they are alerted by the possibility of delayed deliveries, then decide they'd better get their orders in now.

Hold High Level . . . Monthly totals for new machine tool orders have been roosting on a $60 million plateau for the past 90 days. Only last November the monthly sales figure dipped to $35.3 million. Then, for some reason, December sales jumped up to an even $60 million. January sales equalled this amount and February business gained another $2 million.

Builders will insist that one, two, or even three successive months of good business do not constitute or even indicate an industry trend. Perhaps not, but there are not nearly as many machine tool executives wearing long faces now as there were last November.

Encouraging conclusion builders draw from the past 3 months' sales figures is that the business is not traceable to a single major source. Military buying for defense reserve purposes has been negligible. Automotive firms have made substantial purchases as usual, but a liberal sprinkling of business has come from various unclassified segments of the metalworking industry.



Defense Orders Lag . . . Long-awaited machine tool orders from the Army, Navy and Air Force are very slow in coming through. The three services split $100 million in Vance Plan funds last fall, are still bogged down in deciding which equipment types will best serve the national interest and still give them the best dollar value.

Another government tool buying program hasn't been headline news recently but it is showing some progress. This is the Office of Defense Mobilization's plan to build a reserve of elephant machine tools for any defense emergency. First step in this project was to determine just how much of this equipment existed in civilian plants.

A survey to answer this question has been completed for ODM by Business and Defense Services Administration. Results of the questionnaires returned to BDSA confirm that an elephant tool shortage does exist when measured against ODM's calculated need. Next step is to survey government-owned elephant tools to see if shortage can be cut.

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Competent Gear Inspection identifies type of gear inaccuracy immediately... saves production time and gear blanks. If you are making gears for your own use... you will save many man-hours of costly assembly time. If you are making gears for an outside customer... Fellows Instruments will give chart-recorded proof beyond argument of your gear accuracy.

Whether you're making small, fine pitch gears or large coarse ones... whether you want a composite inspection or a check of involute profile or lead... there's a Fellows Inspection Instrument to suit your particular needs. Ask your Fellows Representative to show you *all* the advantages of modern gear inspection methods and instruments for your plant.

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The Iron Age SALUTES

Nils Anderson

His quick reactions as new needs appeared has speeded supply of basic materials to the metalworking industry and brought his company to a top spot in domestic and foreign markets.

When Nils Anderson goes cruising down the Chesapeake these days, his thoughts can range from decorations by the King of Sweden to 3¢ hotdogs on a $5 salary in Brooklyn.

Back before the first world war, Nils helped found Debevoise-Anderson Co., East Coast suppliers of pig iron, coke and other basic materials for metallurgy.

By the late thirties Anderson interests were handling over a million tons of pig iron for export. The company is established today as a strong force in domestic and export markets.

Just how does a man jump from the hotdog league to an eminence recognized in royal and industrial circles? Well, hard work, of course, in Nils' case. He scrambled and sweated in those early days.

But lots of us work pretty hard and we're still chewing weiners regularly. Nils special gift has been the ability to see new needs. He has recognized needs and he has acted decisively in filling them.

With the coming of merchant by-product coke plants in 1917, he was one of the first to see the benefits of the new process. Moving fast to make a supply available, he pioneered the use of metallurgical coke in iron foundries.

Nils assumed full control of the firm after World War I and interests were expanded to include limestone and related operations.

Then Nils saw the possibilities of foreign markets. Overseas operations grew and Debanders Export, Inc., was formed to handle import and export of coke and iron.

Full development of export came in 1937 when Great Britain named Debevoise-Anderson sole buying agent of pig iron in this country. Booming shipments soon confirmed Nils' estimate of the export market.

Now board chairman at Debevoise-Anderson, Nils likes his boating, fishing and hunting. He travels and has a home on Maryland's Eastern Shore, a long way from Brooklyn.

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The Iron Age INTRODUCES

Lawrence M. Krebs, appointed to the sales engineering staff, NOPAK Div., **Galland-Henning Mfg. Co.,** Milwaukee.

John M. Brion, appointed a vice-president and secretary, **Peter A. Frassee & Co.,** New York. Other appointments: **Lester E. Brion, Jr.,** vice-president; **Frank M. Daughety,** treasurer; **John D. Drummond,** vice-president at Philadelphia; **Bernard Dolan,** assistant vice-president, charge of sales.

Martin H. Olstad, elected a director of the **Niagara Blower Co.,** Buffalo.

Edgar R. O'Brien, elected vice-president and general manager, **Edgcomb Steel of New England, Inc.,** Milford, Conn. **William F. Vosmer,** appointed to the board of directors.

Glenn M. Herring, named manager, steel mill sales, **Hanson-Van Winkle-Munning Co.,** Matawan, N. J. **William H. Brown** named sales representative at Philadelphia.

Robert P. MacNeil, joined Arnot Jamestown Div., **Aetna Steel Products Corp.,** as research coordinator.

Edward G. Mack, named director of research, American Kitchens Div., **Avco Mfg. Corp.,** Connersville, Ind.

Roy L. Blanchard, elected president and general manager, **Beaver Precision Products, Inc.,** Clawson, Mich.

Fred Osann, Jr., appointed staff executive director, forward planning, Automotive Body Div., **Chrysler Corp.,** Detroit.

Walter F. Wacht, named works manager, **Wyckoff Steel Co.,** Pittsburgh. Others appointed: **Stephen Maslanik,** superintendent; **Edsel E. Bishop,** metallurgist and manager, product development; **Lyle A. Weaver,** manager order and traffic departments; **William C. Undercoffler,** chief engineer; **Gregor W. Betz,** assistant to chief engineer.

Ben H. Ward, appointed manager, factory division, **Lees-Bradner Co.,** Cleveland.

Ralph A. Steude, named assistant general purchasing agent, Battery Div., **Electric Auto-Lite Co.,** Toledo. **W. H. Suddath,** named purchasing agent, battery plant, Vincennes, Ind.; **Max O. Martin,** appointed purchasing agent, wire and cable division, Port Huron, Mich.

Ernest L. Mathy, elected to the board of directors, **National Welding Equipment Co.,** San Francisco.

Phil Norton, appointed executive vice-president, **Wisconsin Motor Corp.,** Milwaukee. **F. B. Esty,** promoted to chief engineer; **Ralph Switzer,** appointed director of research and development engineering. **Miss Ann M. Crantz,** named secretary.

O. A. Pfaff, elected to the board of directors, **Bell Aircraft Corp.,** Buffalo.

DANIEL H. DELLINGER, appointed assistant vice-president, charge of research, development and quality control, Great Lakes Steel Corp., Detroit.

CHARLES J. STILWELL, elected chairman of the board, The Warner & Swasey Co., Cleveland.

WALTER K. BAILEY, elected president, The Warner & Swasey Co., Cleveland.

EDWARD H. D. GIBBS, appointed vice-president-sales, Heyl & Patterson, Inc., Pittsburgh.

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Louis F. Weyand, named sales director, **Minnesota Mining & Mfg. Co.,** St. Paul, Minn.

Henry L. Charlton, appointed assistant to the president, charge of sales and manufacturing, **Phoenix Mfg. Co.**

Dwight C. Brown, appointed senior process engineer, Research and Development Dept., **Jones & Laughlin Steel Corp.,** Pittsburgh.

George J. Nicastro, heads the New York office of **Pacific Coast Engineering Co., Inc.**

Joseph D. Delaney, named Cincinnati plant purchasing agent for **Trailmobile Inc.**

George E. Farren, appointed field engineer, Hartford, Conn., **Norton Co.**

Carl A. Eversman, named manager, **Mullins Mfg. Corp.,** Salem O.

William Taylor, named assistant to the president, **Detroit Bevel Gear Co.**

Stuart E. McMurray, elected a director, **Peoples Natural Gas Co.,** Pittsburgh.

Mel Jackson, appointed sales representative, northwestern part of Indiana and the south side of Chicago, Wolverine Tube, division of **Calumet & Hecla, Inc.**

Paul J. Every, named assistant general sales manager, **Cummins Engine Co., Inc.,** Columbus, Ind.

Harry V. May, named plant manager, Aluminum Div., Adrian, Mich., **Bridgeport Brass Co.**

S. Malcolm Blanch, elected chairman of the board, **Anderson Corp.,** Worcester.

Roy L. Salter, appointed first vice-president, Southern Wheel Div., **American Brake Shoe Co.,** New York.

JOSEPH A. GEUSS, appointed chief engineer, Hamilton, O., Clearing Machine Corp.

FRANKLIN FARREL III, elected president, Farrel-Birmingham Co., Inc., Ansonia, Conn.

D. PIERSON SMITH, elected vice-president-sales, National Broach & Machine Co., Detroit.

ROBERT B. MURRAY, JR., appointed assistant to the president, Baldwin-Lima-Hamilton Corp., Philadelphia.

Case No. 42

Kemp Immersion Heating Gets Top Results for Signode Steel Strapping Company

How Signode Steel Strapping Co. tempers 650 feet of steel strap every minute

At the Signode plant in Sparrows Point, Md., turning out up to a thousand miles of steel strap daily calls for fast, efficient production line techniques. One highly important phase in the final processing is the tempering bath. Here, Signode called on Kemp Engineers to supply the 15 ton, gas-operated Immersion Melting Pot shown above. Now steel strap is uniformly tempered at the rate of 650 feet per minute.

Kemp Offers More Advantages

By installing Kemp Immersion Heating, Signode benefits in many ways. Unlike underfired pots, Kemp pots are *not* subject to *periodic* and expensive shutdowns . . . won't crack or break. They operate *continuously* at maximum heating efficiency with a *substantial* savings in fuel costs. Offer a greater heating surface, faster heat recovery, lower dross formation, even lower room temperatures. At the same time, this Kemp unit enables Signode to eliminate costly temperature override and open flame fire hazards.

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These same advantages apply to all types of melting or heating operations. Whether you are engaged in tempering, annealing, descaling, coating, etc., you can rely on Kemp Immersion Heating. Why not find out how Kemp Engineers can help you, save you money?

This 10 ton oval pot is typical of the many Kemp installations now in use. Features Kemp Carburetor, part of all Kemp equipment, to deliver complete combustion . . . without waste . . . without tinkering. One-pipe air and fuel feed reduces installation costs, simplifies maintenance.

For more complete facts and technical information, write for Bulletin IE 11 to C. M. KEMP MFG.CO., 405 East Oliver St., Baltimore 2, Maryland.

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Figured on the basis of trouble-free performance alone, the ultimate cost of Perkins Gears is considerably lower than their initial cost-per-piece would indicate. Best of all, even the initial cost of Perkins custom-made Gears may be competitive. And that is something you can quickly and easily determine by asking us to quote on your requirements.

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William Barclay Harding, elected to the board of directors, **Electric Auto-Lite Co.,** Toledo.

John L. Strauchon, appointed to the project-sales engineering staff, **Tenney Engineering, Inc.,** Union, N. J.

John Srawley, joined **Arwood Precision Casting Corp.,** New York, as standards engineer.

G. J. Newhams, appointed advertising manager, **Dravo Corp.,** Pittsburgh.

Joseph F. Houdek, Jr., named chief, general laboratory, **Kellogg Switchboard & Supply Co.,** Chicago.

William D. Craddock heads stainless steel fabrication, **Kaiser Metal Products, Inc.,** Bristol, Pa. **Theodore A. Wozniak** heads cost estimating in two of the firm's plants. **Ralph W. Kindley,** named budget director, plant 1 and 2.

David D. Cooper, elected secretary, **Northeastern Steel Corp.,** Bridgeport, Conn.

William M. Westphal, elected vice-president, charge of sales, **Moore Steel Inc.,** New Orleans.

Jack D. Tolliver, appointed manager, sales development division, **Tube Turns,** Louisville.

Lloyd O. Neff, promoted to industrial relations director, Hudson Special Products Div., **American Motors Corp.,** Detroit.

Edward Stern, appointed assistant general manager and **Victor Siegel** appointed assistant treasurer and credit manager of **Fabricators Steel Corp.,** Bladensburg, Md.

George B. Secor, appointed assistant to the president, **Gregory Industries, Inc.,** Toledo.

William A. Martin, elected vice-president and general manager, Marine and Industrial Engine Div., **Chrysler Corp.,** Detroit.

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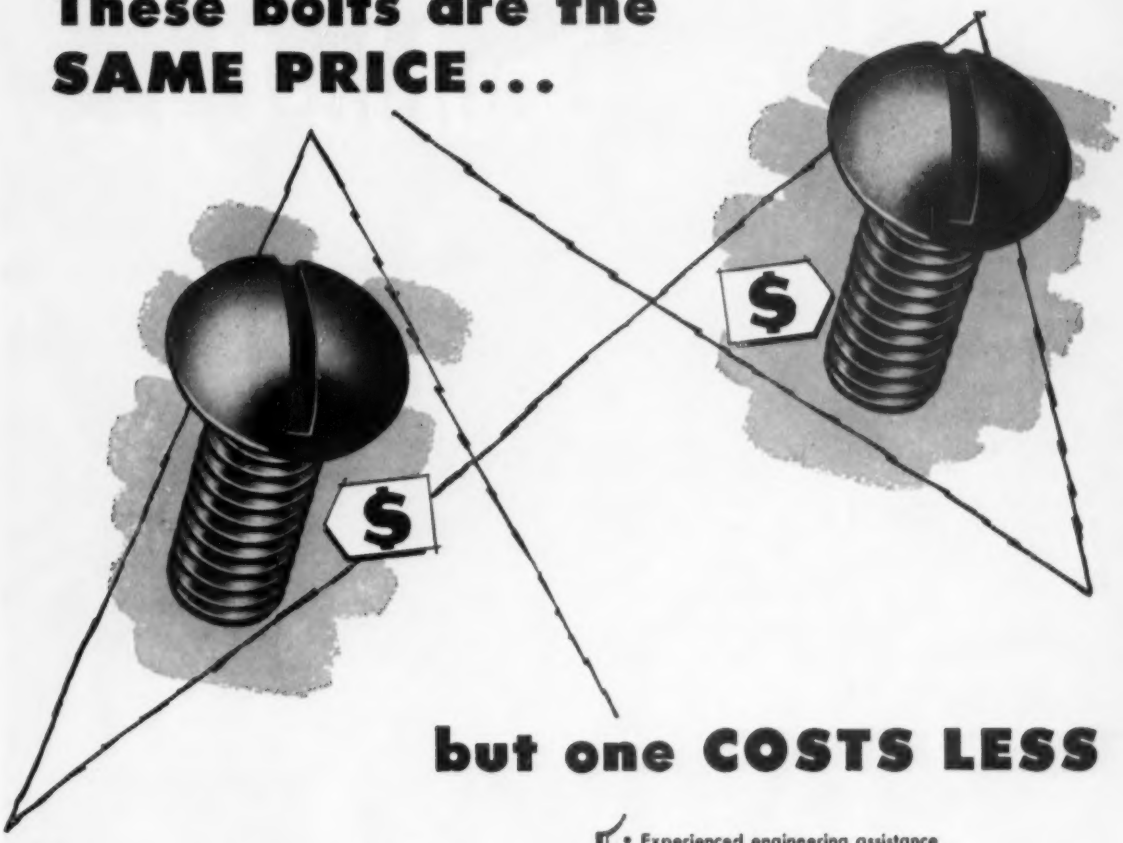

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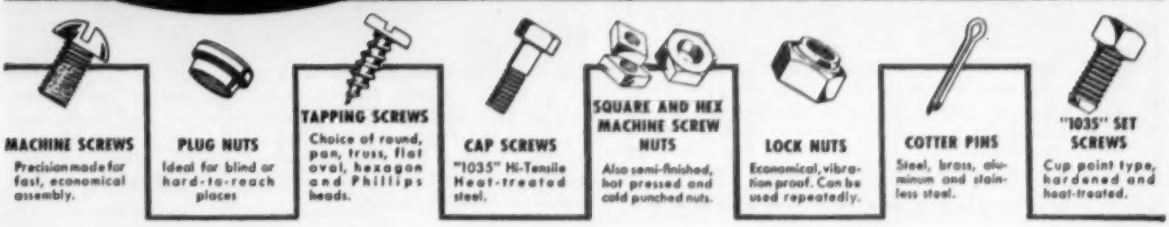

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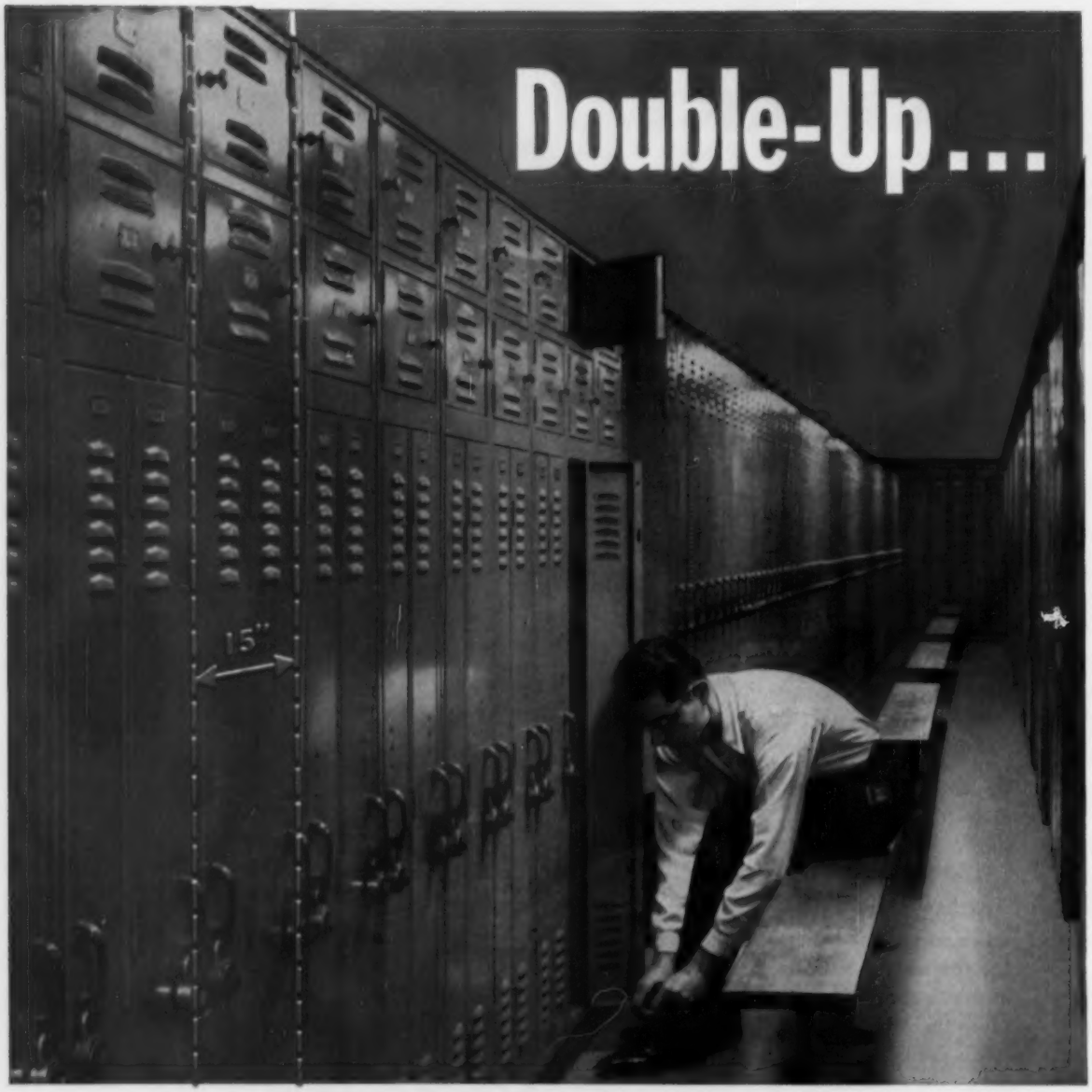

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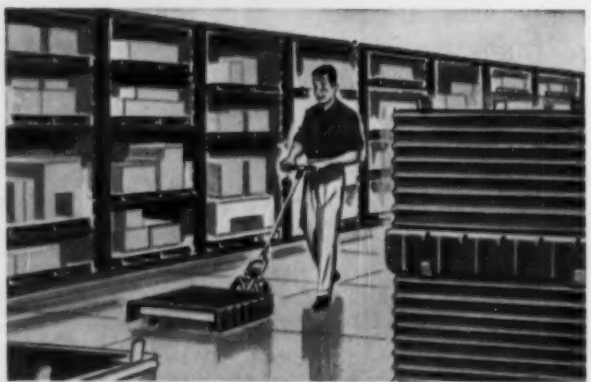

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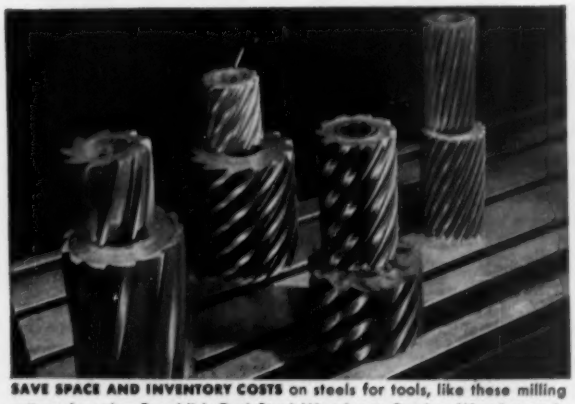

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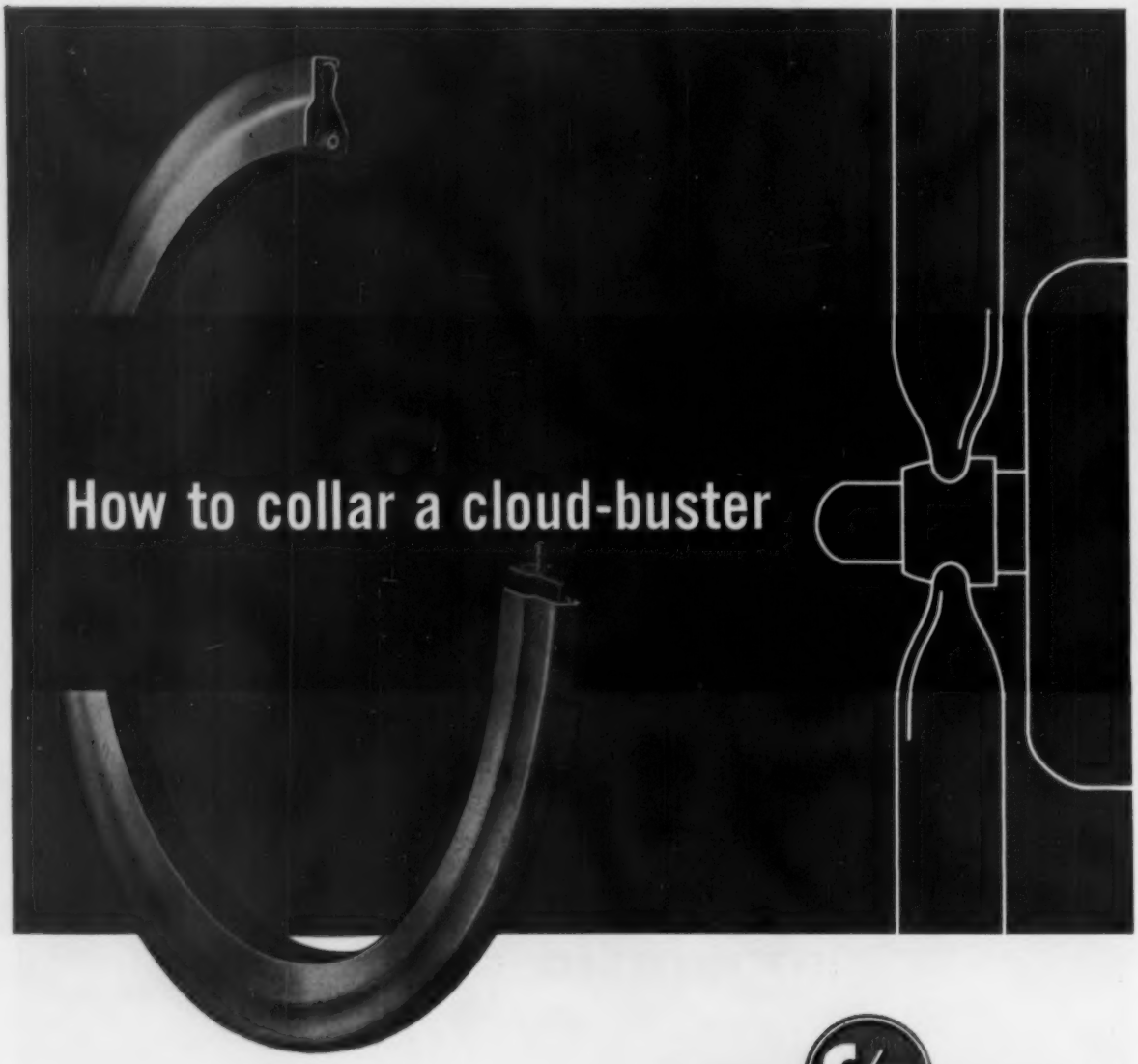

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VESSEL at Dofasco is 25 ft high with a diameter of 14 ft. Total weight is about 100 tons. Vessel has a working volume of 1150 cu ft which increases to 1650 at end of campaign.

IronAge FOUNDED 1855 TECHNICAL ARTICLES

Oxygen Steelmaking: How Canadian Plant Uses New Process

◆ Oxygen steelmaking may prove one of the most significant steelmaking developments in many years . . . It provides a method for making steel with a low nitrogen content . . . It permits close control of carbon, manganese, phosphorous and sulphur.

◆ Two companies, one in Canada and one in the United States, have backed their belief in the future of the oxygen process with hard cash . . . Preliminary reports on steels produced by the process indicate this faith has been justified.

By F. J. McMULKIN, Research and Development Engineer, Dominion Foundries and Steel Ltd., Hamilton, Ont.

◆ THE DEVELOPMENT of plants capable of producing low cost, high-purity oxygen on a high tonnage basis has had a great impact on steelmaking practices since World War II.

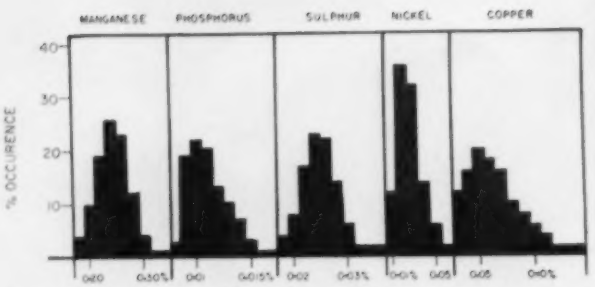
In North America, the use of oxygen has been widely applied to Bessemer, openhearth, and electric steel making. In Europe, it has made the Thomas (bessemer) process more flexible in handling a wider range of iron analyses and in producing higher quality steel. It has also permitted development of a new "pneumatic" process which may challenge older steelmaking methods in producing a superior grade of low carbon steel. This new method, the Oxygen Steel Making process, is now being used on a production basis at Dominion Foundries and Steel Ltd. (Dofasco).

At Dominion Foundries and Steel Ltd., all the low carbon rimmed and mechanically capped grades required by the mills are now being made by the oxygen process. Skelp and other rimming grades for hot rolled products up to 0.20 pct carbon and also killed grades up to 0.20 pct carbon have also been produced. Since the process has been in operation less than six months it is not yet possible to give a full list of all the types of steel which can be made.

Contrasted with former practice at Dofasco, benefits derived from this new steelmaking

process so far include: (1) More even flow of steel to the hot mills with an appreciable savings of fuel for reheating; (2) a steel which is much more uniform in its performance in cold rolling and annealing; (3) a steel equally as good as that produced in the openhearth furnace and in some applications better; and (4) ability to maintain flexibility in steel production by adding this new process in parallel with electric furnaces in the plant. Credit for success of the operation to date is due to the extensive pilot plant operation which was run prior to and during the planning and construction of the new shop.

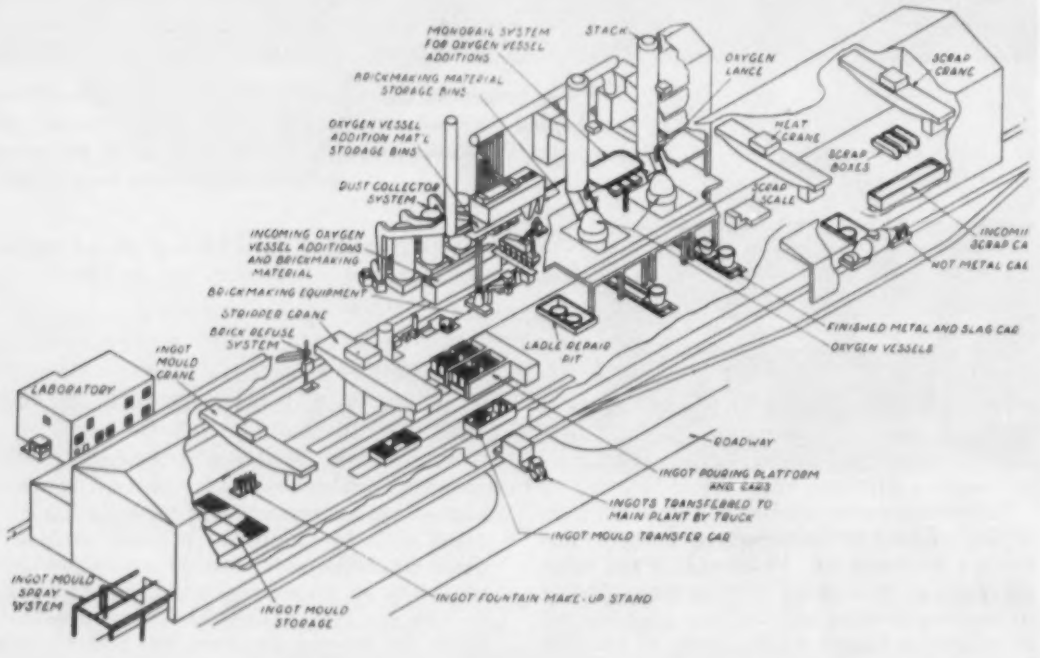
The vessel used at Dominion Foundries and Steel is almost a direct copy of the vessel operating at Linz, Austria. It is slightly larger, being 25 ft high and with a diameter of 14 ft. The permanent lining is magnesite brick backed up by fire clay brick. The working lining is principally tar dolomite brick with a backing of rammed tar dolomite. Total weight is about 100 tons. This permits a working volume of 1150 cu ft which increases to about 1650 at the end of a campaign. Based on a 45-ton charge, the depth of the bath will vary between 42 and 30 in. from first to last of the campaign. Charge capacity averages a little over 45 tons of metallic charge and the vessel has operated with as much as 50 tons of metallic charge. As the campaign progresses on each lining it is expected that larger charges can be accommodated.



RESIDUAL elements occurring in 100 heats during the period from January 10-15, 1955.

At this time, after less than six months of operation, this plant is getting about 250 heats on a lining; a life of 300 heats appears possible. Present performance gives a dolomite consumption of 20 lb per ton of ingots. Refractory cost is appreciably lower than the refractory cost in the openhearth.

To determine the best average heat cycle possible in this new shop, it should be compared with a shop provided with an unlimited supply of hot metal and the necessary crane service. The only difference between the present 45-min. cycle and an ideal 34-min. cycle is charging time. Visits to the two Austrian oxygen steel-



ENGINEERING studies showed that the oxygen steel plant, above, could be built for not more than 50 pct of the cost of a new openhearth shop of the same tonnage capacity. The cost of a duplex shop using a converter and either electric or openhearth furnaces was also greater.

making plants make this fast a cycle seem possible.

Another factor which influences the maximum production rate is the type of scrap used. At Dofasco only purchased scrap is charged to the vessels except for a small amount of ingot floor scrap. At Linz and Donawitz, Austria almost all heavy mill scrap is used. By contrast, Linz requires only two partly filled charging boxes of scrap per heat while Dofasco has been averaging three full boxes. The boxes at Linz and Donawitz are 80 cu ft capacity compared to 160 cu ft at Dofasco. At the Canadian plant no metallurgical difficulty is encountered in using any type of scrap.

Control of bath temperature is governed by the percentage of scrap used. The per cent scrap required is primarily influenced by the fluctuation of the silicon and the temperature of the blast furnace metal. Carbon, manganese and other elements do have an effect but are not as strong variables as the first two mentioned. Since it was planned to operate without the leveling effect of a hot metal mixer, it was decided that a check on the silicon analysis of each hot metal charge was necessary to give accurate control of temperature and slag analyses. An automatic spectograph is used to obtain a silicon check between pouring and charging the ladle of hot metal.

Analysis duplicates openhearth

The analyses of blast furnace hot metal average out as follows: C, 4.40 pct; Mn, 1.30 pct; P, 0.125 pct; S, 0.025 pct; and Si, 1.20 pct. This is the same analysis of iron used in the company's openhearths and is quite typical of that produced by many American furnaces except that the phosphorus content is probably lower than average. The shop has operated with iron running up to 0.180 pct phosphorus without having any trouble with high residual phosphorus contents. Experience has also been gained in operating with iron having as low as 0.50 pct silicon and as high as 2.00 pct silicon with no difficulty.

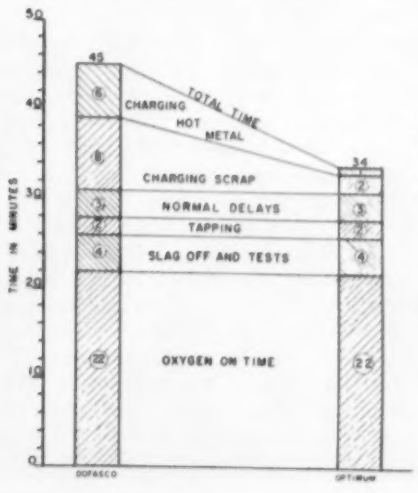
The relationship of the percentage scrap in the charge to the percentage silicon in the hot metal, based on actual experience in operating at a rate of about one heat every 55 min. is shown in the table.

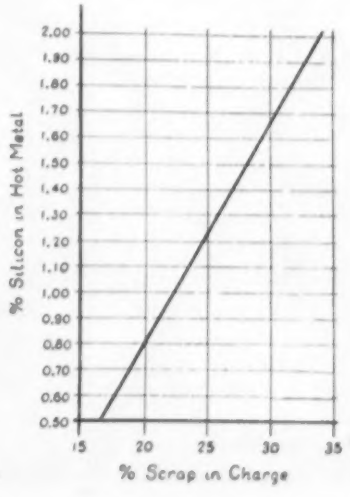
The makeup of the flux portion of the charge is aimed at obtaining the same weight of slag per ton of steel and the same slag analysis for each and every heat. A 7 pct lime charge and also a 3:1 ratio of lime to silica is desired. If necessary, silica is added to maintain this ratio.

Fluxing agents for the lime are added in the form of millscale which is one percent of the metallic charge weight and also spar which will be between 100 and 200 lb at the discretion of the melter.

Control of the slag composition is maintained first by determining the amount of silicon entering the charge in the hot metal. The weighing of the flux additions is done as accurately as possible. The resulting slag closely resembles that of an openhearth furnace making the same grade of steel. A representative analysis would be as follows: CaO, 50.0; SiO_2, 17.0; FeO, 16.0; MnO, 8.0; MgO, 3.0; Al_2O_3, 3.5; and P_2O_5, 1.2. Following the oxygen treatment the bath is sampled and the slag is evaluated by a slag patty as well as viewing the bath. If the FeO is not high enough the bath can be retreated with oxygen to generate the required FeO. At this time, calling of the end point is by visual observation and quite close control of the FeO content is possible. All rimmed grades are taken down to the same end point.

Ladle additions are made in the same manner as in the openhearth. With the spectograph system it is possible to have a residual manganese reported in time for calculating the required ferromanganese addition. Up to now ferromanganese has been added based on the FeO content observed in the slag patty test since there is a fairly close relationship be-





Left: **COMPARISON** of steel making vessel cycle at Dofasco shop with optimum possible cycle with added shop facilities and heavy scrap.

Right: **PERCENTAGE** scrap charged versus percentage silicon in hot metal at Dofasco.

"The plant for collecting and extracting fumes was designed with a new approach . . ."

tween residual bath manganese and FeO in the slag. Since the residual manganese content is inherently much higher than in openhearth steel the amount of manganese addition required is quite small.

A chart of the important residual elements occurring in the bath in the period of January 10-15 (see chart) shows that manganese averages about 0.25 pct and is influenced to some degree by swings in the blast furnace manganese analyses.

Control of phosphorous is quite good with nearly 100 pct of the heats running below 0.015 pct which is the maximum we allowed as a residual. The average figure is close to 0.011 pct and 0.010 pct can be held as a maximum on special order. Assuming that the slag has the correct V ratio and is fluid enough, the FeO content is the controlling factor in insuring control of the phosphorous.

Sulfur averages about 0.024 pct in the bath and is under good control. Lower sulfur residuals can be obtained with an increase in the lime addition. An appreciable loss in sulfur is realized in tapping and final sulfur averages close to 0.021 pct.

The tramp residuals, nickel and copper, are somewhat lower than that obtained in Dofasco's old openhearth operation. If the rolling mill scrap were returned to the vessel, these residuals would probably be cut in half.

The nitrogen content is dependent on the purity of oxygen used. The plant has been operating with an oxygen purity of 99.4 pct or better and residual nitrogen has been 0.0025 pct or less. When operating for a short period with 99.2 pct average purity the nitrogen residual was about 0.0035 pct.

Residual oxygen obtained in the steel with the present practice is a little lower than formerly obtained in openhearth steel. This is shown up by the lower aluminum addition required in the ladle. About one third less aluminum is now added than in the former openhearth practice. This may be due in part to the higher residual manganese, but to a greater degree, it is due to the somewhat lower FeO content of the slag. It has also been possible to work to a narrower range of FeO in the slag than in the openhearth.

Melt shop 650 ft long

The melt shop has a main aisle 650 ft long and 82 ft wide. This aisle is divided into four parts: A scrap loading section; the vessel or steelmaking section; the steel pouring section; and the mold storage section.

The 150 ft long scrap section accommodates two gondola cars at a time and can store 500 and 1000 tons of scrap on the ground. The balance of the ground area is used for loading charging boxes and for a scrap scale and a hot metal transfer pit. Hot metal is delivered in 150-ton Treadwell ladle cars and weighed out to a hot metal ladle set on a transfer car.

The vessel or steelmaking section is 150 ft long. It is partly occupied by the vessel working platform and an area for servicing steel ladles. Two transfer tracks run into this area to handle slag pots and steel ladles.

The pouring section, which is 225 ft long is unique in its layout. Practice here is to bottom pour; an operation which is mechanized as much as possible. Bottom pour sprue plates are mounted on three self-propelled cars.

For stripping, a car is moved midway down the track where the ingots are removed and placed in special ingot trucks for delivery to the soaking pits. After stripping, the pouring car moves to the end of the track where the base is cleaned of sprues and sprue brick, then rebricked. It is then set up with molds and returned to the pouring position. The mold storage section is 125 ft long and can store up to 600 molds, all in current use. The reason for storing so many molds is that the ingot sizes range from 20 to 52 in. wide, progressing in 2-in. steps. Since all steel is slab mill rolled, ingot width is governed by the ordered hot coil width.

New approach to fume control

The plant for collecting and extracting fume particles from exhaust gases was designed with a new approach. The production unit consists of a brick-lined and water-cooled hood which draws off the fumes directly from the vessel and depends on excess air to keep the temperature of gases below 1500°F. The gases are led into specially designed water spray units which exhaust them to the atmosphere at less than 140°F.

Two 70,000 cfm fans insure control of the velocities and volumes required to wash the gas in the water spray units. Exhaust appears as a plume of steam with only a faint trace of color showing briefly in the heat cycle.

The distance between the new melt shop and the hot mill is 1.4 miles. Since two separate property locations were involved, the use of rail transportation would have seriously tied up the continuous flow of ingots to the mill.

To solve this problem, a special insulated and covered ingot truck was designed and built. The operation using these trucks have been virtually trouble free. Average time from finish loading to the start of unloading the ingots has been 9 minutes. Only two trucks are used at any one time. One truck can take half a heat.

Delivery to the mill is at an even rate and soaking pit fuel consumption is down by over 400,000 Btu compared to what it was when all steel was made on the same property location as the hot mill and ingots were delivered by rail.

First in U.S.A.—

U. S. COMPANY REPORTS on Oxygen Steel Process

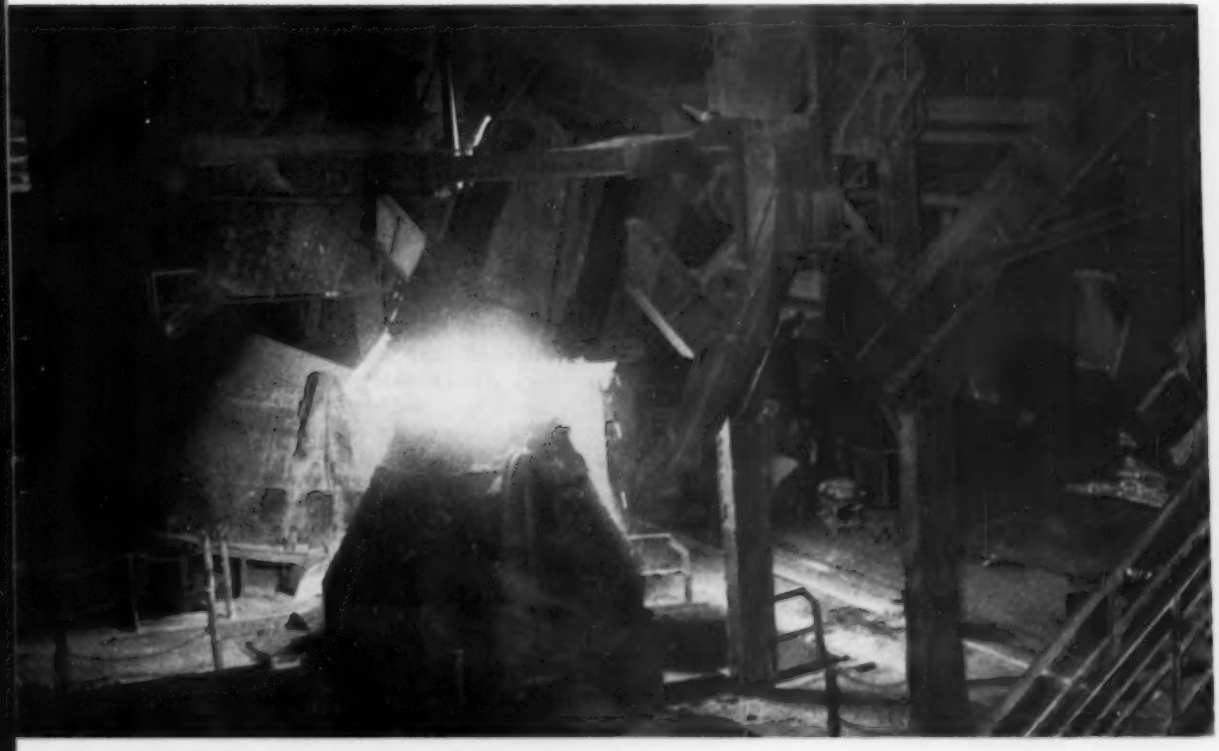
• Here, reports from the first major U. S. installation, at McLouth Steel Corp., Trenton, Mich., offer some insight into what the process may hold for American industry. Forty-ton heats of closely controlled steel are produced in 18 to 23 minutes blowing time . . . To date more than 40,000 tons of steel have been processed.

By W. G. PATTON, Asst. Technical Editor

◆ THE FIRST U. S. installation of the oxygen process for steelmaking using high-pressure, high-purity oxygen to refine a charge of 80 pct molten pig iron and 20 pct scrap is producing 40-ton heats of controlled quality steel at McLouth Steel Corp., Detroit, in 18-23 minutes blowing time. Estimated saving is $3 per ton as compared with the openhearth process.

In addition to high production per hour, the oxygen process offers (1) lower investment per ton than conventional steelmaking, (2) ability to cast high quality steel in ingot form direct from the oxygen process without duplexing in an electric furnace or openhearth.

McLouth has produced heats with nitrogen as low as 0.0013 pct. This is well below the usual openhearth lower limit for nitrogen. Sul-



OXYGEN LANCE enters from top through opening in vessels. Using oxygen, a 40-ton heat of steel is refined in 18 to 23 minutes.

Metallurgists believe the steel will have exceptional deep drawing qualities . . .

phur and phosphorous are being held far below standard specifications of 0.040 pct maximum.

The new $7 million McLouth oxygen process installation has been operating experimentally since last fall. According to Ivor Bryn, McLouth vice president in charge of operations, the new installation represents an important forward step in improving the efficiency of the steelmaking process.

At the present time, McLouth is producing about one-third of its total steel production in a single "vessel." Three oxygen vessels are installed, of which two can be operated simultaneously, thereby at least doubling present daily ingot output of oxygen process steel. Capacity of the McLouth oxygen process is 600,000 tons annually.

McLouth has already produced by the oxygen process more than 40,000 tons of ingots which were rolled into sheet and strip. Reports on steel quality, based on laboratory analysis and reports from consumers, are excellent. McLouth metallurgists believe the steel will have exceptional deep drawing quality as a result of the low nitrogen content and their ability to control chemical composition including carbon, manganese, phosphorous and sulphur within very close limits.

Low alloy steels may be next

As the heat is blown, carbon content has been consistently held within the range of 0.04-0.06 pct. According to Paul E. Lindberg, general superintendent of steel melting, lower carbon steels as well as higher carbon heats can be produced by this process. Oxygen processing of low alloy steels may become practical after sufficient operating experience is gained, McLouth officials say.

To provide oxygen for its melting operations and supply scarfing at its Trenton, Mich., hot mill, McLouth has built a complete high purity, high pressure oxygen plant. The new plant is capable of producing 3,520,000 cu ft of 99.5 pct pure oxygen per day.

Oxygen production facilities at Trenton are rated at 160 tons over a 24 hour period. Oxygen is stored as a gas at 380 lb pressure.

Using its three vessels, McLouth expects eventually to process the entire output of its new top pressure blast furnace rated at 1450 tons per day.

Molten steel is carried directly from the blast furnace in 200 ton thermos bottle cars and charged into the 40 ton oxygen vessels. The scrap charge may be varied, based on the chemistry of the pig iron. At the present time, approximately 20 pct scrap or pig iron is being charged with the hot metal.

Fuel for the final melting operation is supplied by a jet of high purity oxygen which is played on the surface of the metal at a velocity of 4000 fps. The water-cooled lance is lowered from above the opening in the vessel but is not immersed in the metal. Position of the lance, above the surface of the metal, is operator controlled. Pressure of water used to cool the lance is 90 lb. It is anticipated that lining life of vessels may exceed 200 heats under normal operating conditions.

During the process, a white hot flame emerges from the mouth of the vessel to a height of 15-20 ft. Gas and small solid particles generated during the operation are carried off by a hood to a high volume water scrubber and disintegrater which remove all solids. After scrubbing and cleaning, gas is discharged from the stack as clean white smoke.

Building smoke abatement plant

McLouth will also clean its gas from six electric furnaces and tie these operations into its new million dollar scrubbing and smoke abatement plant. This operation should be completed in the near future.

A comparison of the melting rate of McLouth's new 200-ton electric furnaces which began operation last fall and the new oxygen process discloses that a single oxygen vessel has produced up to 66 tons of steel per hr compared with an average output of 23 tons per hr in a 200-ton electric furnace. Output of the smaller 60-ton electric furnaces at McLouth is rated at 17 tons per hr.

McLouth officials believe they will achieve important savings in the cost of oxygen from their newly built plant. Eventually, it is expected that the cost of oxygen may be as low as $6 per ton. Using oxygen for fuel, fuel cost at McLouth may be as low as 70¢ per ton of steel produced.

Charge materials used

McLouth officials say typical mill scrap, cold pigs and purchased scrap may be used for charging the vessel. Also, fluxing materials including limestone, burnt lime and iron oxide are added to the vessel for chemistry control of the steel and the slag.

The oxygen process is licensed by Kaiser Engineering Co. The only other user of the process in North America at present is Dominion Foundries, Ltd., Hamilton, Ont.

Other Iron Age Articles on Oxygen Steelmaking

Steel: Get Rid of Nitrogen Curse, July 2, 1953, p. 75. Steel: Austrians High on Oxygen, July 23, 1953, p. 63. Oxygen Steelmaking Yields High-Quality Product, Sept. 24, 1953.

Converted Pin Router Trims Contoured Parts FASTER

◆ TRIMMING CONTOURED sheet metal parts is usually done on a bandsaw or pin router with the template hidden from view. Now Glenn L. Martin Co., Baltimore, has adapted a pin-routing machine in which template and cutter are in clear view of the operator.

The new method is safer, more accurate and also eliminates several hand operations. It also permits faster trimming of contoured parts.

A standard commercial pin router was converted by replacing the table with a hollow post topped by a template rest. In operation, the cutter extends down into the template rest.

The router head was equipped with a shoe which holds a template guide bushing. The cutter rotates inside this bushing where it is lubricated, cooled, and cleared of chips by a mist created by oil and pressure air blasts.

Controls were also added to move the cutter up and down. This provides clearance for inserting work and allows using the entire cutting length of the router bit before resharpening is necessary.

The special template is made of 1/16 in. galvanized iron or aluminum sheet which has a ¼ x ½ in. strip fastened to its edge. This strip bears against the guide bushing to insure unvarying accuracy of the cut. The template is set back 5/32 in. from the cutting edge to compensate for bushing thickness.

In routing, the bit is almost concealed. If a cutter should break it cannot fly out and injure anyone, but can only drop harmlessly through the hollow post to the floor.

TEMPLATE bears against guide bushing in view of operator to insure trimming accuracy. Chips and broken cutters drop through template rest post. Converted parts are painted white.

Less metal loss—

Weldments Cut Fabricating Costs on Heavy Steel Parts

◆ Steel forgings for heavy duty parts can be tough on machine tools and tooling . . . Cast parts may reveal porosity and must be scrapped even after considerable machining expense.

◆ General Motors' Allison Div. uses weldments as a less expensive, often better way to make certain heavy components . . . Automatic welders bring fabricating costs down.

WELDMENT of three steel rings with a preformed annular groove. Former forging was solid piece.

MACHINING this ring weldment was simpler, much less expensive than cutting a solid forging.

◆ SEVERAL HEAVY TRANSMISSIONS and diesel locomotive parts which were formerly machined from steel forgings or castings are now produced as weldments at the Indianapolis plant of Allison Div., General Motors Corp.

The steel weldments cost less and provide equal or better quality. And they are not subject to casting porosity, which often may result in scrapping the work only after expensive machining has been done.

Savings with weldments result chiefly because far less machine work is required. With the

AUTOMATIC welder helps fabricate a diesel locomotive part formerly made from a casting.

POWDERED iron electrodes speed manual welding operation on this "alternator spider."

castings and forgings formerly used, machining involved heavy, time consuming cuts that were hard on both tools and machines, resulting in substantial losses in metal. Weldments are held close to size and such machining as is needed involves light cuts made rapidly and easily.

A large ring formerly machined from a forging is now made as a weldment. When the ring was made as a solid forged piece, its section was about 1¾ in. thick and 4 in. wide, measured radially. Heavy cuts were required on all sides and the job of machining an annular groove in the periphery was especially difficult and costly.

As a weldment, this ring is built up from three pieces joined by automatic hidden arc welds. Two flat rings whose sections measure ½ x 2½ in. and ¾ x 2¾ in. respectively, are joined to a third base ring of 1⅜ x 1⅜ in. section.

Comparatively little machine work is needed on these rings. The initial bevel cuts yield V-grooves to receive weld beads and because the inner and outer rings are spaced apart by a narrower one the annular groove does not have to be "hogged out."

Superior weldments have also replaced steel sand castings for making the alternator spiders used in Electro-Motive Diesel locomotives. These weldments are made in two sizes. Basically, the spiders are cylindrical drum-like assemblies with one end closed by a circular plate. A similar plate with large hand holes is positioned about half way inside the shell and welded circumferentially. The open end has a heavy flange ring.

All spider components are cut from heavy steel plate. The shell and flange ring are roll-formed and welded longitudinally before the circular plates are welded in place.

Suitable bevels are cut to form V-groves for the weld beads and all external welds are produced by automatic hidden arc welders.

Most welds are circular

Most of these automatic welds are circular. They are produced as the positioned workpiece, with parts tack welded in place, is rotated about a horizontal axis under an automatic head. Each weld requires two passes to fill each V-groove. Grooves have to be quite deep because the plates average about 1½ in. thick.

Flux is fed from the head hopper in the usual way. A brush is used in advance of the electrode to help hold the flux at required depth.

Internal beads on these alternate spiders are located so that it is not feasible to produce them on an automatic welder. They are completed by manual welding, using contact type electrodes. These electrodes, heavily coated with powdered iron, have deposition rates up to 50 pct higher than conventional electrodes.

An accompanying photograph shows one of these welds being produced. Although it is not shown in the picture, the shell is usually placed on a turntable in a slightly inclined position. The operator then turns the workpiece manually as welding proceeds.

Best results are attained when welding proceeds slightly upgrade, but the weld is made in the downhand position. These welds are uniformly high grade and spatter is so slight that very little cleaning is needed.

Machining the spider weldments is much faster than was possible with the cast spiders. Machining cuts are also much lighter, which reduces metal waste and because the weldments consist of wrought metal of uniform density, dynamic balancing is simplified.

Tooling trends—

H. B. Osborn, Jr., President

Production Ideas Pace West Coast ASTE Show

By R. R. KAY, West Coast Editor

♦ For the first time ASTE brought its Industrial Exposition and Conference to the West Coast . . . It got a mighty enthusiastic reception from western metalworking executives and engineers . . . New ideas for presswork tools and methods, tooling for plastic products and quality control through realistic tolerances were among the many subjects discussed . . . More than 270 companies exhibited their latest machines, tools, materials and processes.

♦ What to do about old machine tools? What will automation do to the economy? How tolerant to be with tolerances? Can designers develop machines to control technological data? Should engineers get more executive responsibility?

These were just a few of the questions that were in the air at the American Society of Tool Engineers' 23rd Annual Meeting in Los Angeles, March 14-18.

THE IRON AGE spoke to many of the top people at the meeting. Trend of their thinking went like this:

Old machine tools are costing industry a billion dollars per year in lost production. . . . Automation does not throw people out of work but results in a higher standard of living for everyone. . . . Development of machines for control of technological data and information is an urgent challenge for machine designers.

Modern industry is tending to give engineers more and more executive responsibilities. . . . Industry is urged to be more tolerant with tolerances or specifications for highly precise parts to achieve higher production at lower cost. . . . There's more to ceramics than pottery and dinnerware—it's playing an important role in industrial progress.

Production of holes in manufactured parts is probably the most important single manufacturing operation. . . . Aluminum producers are eager to increase today's 20,000 uses of the metal. . . . Plastic tooling's cost-cutting advantages in the automotive and aircraft fields are just being realized.

Never before have as efficient tools and processes been offered to production engineers as today. . . . A new machine squeezes teeth onto automotive axle shafts and similar parts 36 times faster than conventional cutting tool processes. . . . Steel, heat treated to withstand pressures

H. C. McMillen,
First Vice-President

H. E. Collins,
Second Vice-President

Newly Elected ASTE Officers

of 260,000 psi to 280,000 psi, enables manufacturers to increase size of aircraft without increasing weight of existing parts.

Industry cuts costs for many intricately formed products by freezing their mercury patterns at −100°F. . . . Metalworking safety can be improved by use of a relatively new device. . . . Machines detect errors of 0.0001 in. in gears for autos, aircraft.

For the first time, ASTE brought its Industrial Exposition to the West Coast. It got a mighty enthusiastic reception from western metalworking executives and engineers. More than 270 companies exhibited their latest machines, tools, materials, and processes.

New officers include: President, H. B. Osborn, Jr., Tocco Div. of Ohio Crankshaft Co., Cleveland; First Vice-President, H. C. McMillen, Philco Corp., Bedford, Ind.; Second Vice-President, H. E. Collins, Hughes Tool Co., Houston; Third Vice-President, R. C. Peterson, Peterson Engineering Co., Toledo; Fourth Vice-President, Wayne Ewing, Arrowsmith Tool & Die Co., Inc., Los Angeles.

Grid Line Technique for Draw Dies

Use of scribed 1-in. grid lines for developing draw dies in the die tryout stage was explained in a fine talk by Max Lauderback, superintendent of metallurgy, Kaiser Steel Corp., Fontana, Calif. Both from the standpoint of the steelmaker, interested in keeping breakage to a minimum, and to press shop management, trying to get the stamping into production as quickly and as easily as possible, Mr. Lauderback suggests that the grid line technique be used at all times for developing draw dies. It consists of scribing the flat blank before forming with a series of shallow scratched or scribed lines 1" apart for large stampings and ½" apart or less for smaller stampings. The lines should be both parallel and 90° to the direction in which the steel is rolled.

The scribed blank has the appearance of a checkerboard pattern when completed. By studying the distortion of the checkerboard pattern after forming, many breakage problems that seemed to be a mystery in the past are suddenly brought to light and the future course of action can be planned more intelligently. Die spotting can then be directed toward lowering the stretch in areas of maximum distortion. This should be followed by a systematic study of the change in flow characteristics after each die alteration by the continued use of scribed blanks. This insures that the alteration is in the proper direction.

By measuring the square with the greatest per cent elongation of each axis, a numerical index can be obtained. A press shop can rate or classify every stamping that is produced in the order of increasing severity of draw. Once a reliable rating of drawing quality can be made it should lead to more intelligent use of the available steel inventory and a better understanding of die design to eliminate as many future drawing problems as possible.

Magnesium as Tooling Material

For jigs, fixtures, and low-production dies, magnesium offers a unique combination of lightest weight and best workability. Economy is achieved not only in use but in tool fabrication as well. Magnesium rolled plate and extrusions have the fine-grained, porosity-free structure, toughness, and strength of a wrought material desirable for good tool performance. The low price of rolled plate is now coupled with flatness tolerance and dimensional stability because magnesium tooling plate is anneal flattened in the mill. This information came from R. L. Nelson, technical service and development, Magnesium Dept., The Dow Chemical Co., Midland, Mich.

Detailed in this paper were representative designs for magnesium tooling including inspection and quality control fixtures, vibration test fixtures, machining fixtures, stretch and rubber forming dies, assembly and locating jigs, welding fixtures, and drill and routing jigs.

Mr. Nelson listed properties that make magnesium a desirable material for tooling: light weight, dimensional stability, close flatness tolerance, high strength, good elongation and toughness, maximum rigidity per unit weight, economical machining, excellent weldability, and alkaline resistance.

Plastic Forming Tools

Epoxy resins show remarkable strength, permanence, and adhesion. Laminated and cast epoxy resins are fulfilling increasingly important applications as tooling masters or as tools for forming sheet metal. According to John Delmonte, general manager, Furane Plastics, Inc., Los Angeles, shrinkage factors are of the utmost importance in tooling of this character, and polymerization as well as thermal shrinkage must be considered.

Mr. Delmonte has used endothermic type hardeners with epoxy resins. These have entailed moderately low cure temperatures and, correspondingly, very little shrinkage. Compressive strengths of 40,000 psi are readily achieved in laminated structures, without any tendency toward delamination between plies. The dimensional stability of tools is affected by the state of cure of the material, temperature prevailing during service application, maximum stress and its time of application.

New Surface Roughness Standard

New slant on surface roughness is establishment of an all-inclusive standard able to replace all existing standards. It seems satisfactory for universal use by all manufacturers of precision machined parts throughout the world.

The new American Standard ASA, B46.1-1955, "Surface Roughness, Waviness and Lay," was explained by J. A. Broadston, manager, Propulsion Field Laboratory, North American Aviation, Inc., Santa Susanna, Calif. It describes in detail the nomenclature associated with surface quality control and how it is designated on the drawings and measured by specific types of instruments. It also describes precision reference specimens and roughness comparison specimens suitable for establishing physical standards in this field.

Four appendices give supplementary information and examples explaining the use of the standard, provide general notes on the use and interpretation of tracer type instruments, and explain the use of precision reference specimens in maintaining uniformity in the calibration of such instruments. Information is also given on surface roughnesses produced by common production methods and makes recommendations as to their use in the design of machine components.

Tips on Twist Drill Life

Investigation of twist drill performance fundamentals shows that chip formation along the drill lips is similar to that of other cutting tools but that under the chisel edge the metal deformation involves a combined indenting-metalcutting-extrusion process. Because the drill lips are inclined appreciably to their direction of motion, the *effective* rake angle of a twist drill is positive all along the length of the lips, according to Carl J. Oxford, Jr., research engineer, National Twist Drill and Tool Co.

The life of twist drills appears to follow the Taylor $VT^n=C$ relationship, but it is difficult to establish a reliable relationship where drill feed is a variable.

Drill stiffness is an important factor when drilling tough materials. Increased stiffness due to shorter drill and flute length can result in great increases in drill life.

Size of drilled holes can vary greatly, depending on drilling conditions, but formulae are available which should be useful in estimating average oversize. However, hole size variations are such that the twist drill cannot normally be considered a precision hole-producing tool.

Drilling tests, especially those conducted under normal shop operating conditions, can often give misleading and totally erroneous results unless proper precautions are taken. This is largely because of scattered results due to lack of control of the variables involved. While large differences in drill performance can be readily detected, small differences of 10 pct to 25 pct can be reliably determined only through a very extensive testing program. Statistical methods are of value in determining reliability of data.

Study Chip Breaker Design

The constant high price of industrial diamonds combined with the hazards of a critical shortage during periods of emergency makes it imperative to seek methods of reducing, if not eliminating, the need for diamond wheel grinding. Dr. Erik K. Henrikson, University of Missouri, Columbia, Mo., brought this out in a talk on findings and trends in chip breaker design.

Grinding of step-type chip breakers out of a solid carbide blank is one operation which had no fully satisfactory substitute for the diamond wheel. However, it's very fortunate that a different type of chip breaker, the clamped, does not require this critical grinding operation.

For the ground chip breaker there has been available, for many years, a table of dimensions. This fact has, no doubt, supported and facilitated its wide application. Since no such information was present for the clamped chip breaker, Dr. Henrikson began a study of it.

Clamp-on type has found a much wider use in Europe than in U. S. In addition to its safety feature, its principal advantages include longer life and less consumption of the critical tool materials such as carbides and diamonds.

Patterns are most important—

ALUMINUM shell molded casting for an electronic device is 3.875-in. high, 1.312-in. wide, with 0.080-in. wall. Due to section lightness it could not be sand cast. Shell molding saved 75 pct over die cast cost, produced suitable surface finish and better ductility.

Foundry Offers Tips for Better Shell Mold Castings

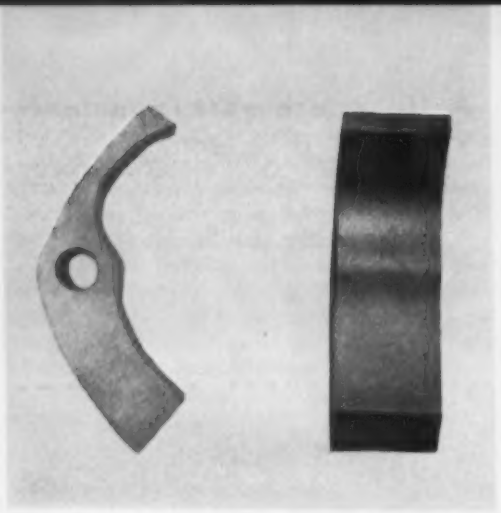
- Accurate patterns and good pattern-making equipment are essential for quality shell molded castings . . . Pattern plate operating temperatures between 450° and 500°F keep shell warpage to a minimum.
- Vibrating the material boxes during the investment cycle distributes the resin-sand mix uniformly . . . Fine grain sands are harder to work with but pay off in better casting finish.

◆ SHELL MOLDING is making rapid headway in becoming common practice in the foundry industry. About 200 of the nation's 5000 foundries are producing castings by this method. Another 500 are experimenting with the process.

From more than three years' experimental and production work on shell molding, the Emmaus Foundry & Machine Co. believes that all jobbing foundries will eventually use the technique to some degree. Present production of shell mold castings at the plant is up to two tons per day of iron and one-half ton of aluminum.

The company finds that accurate patterns and good pattern equipment are the dominating factors in producing good shell molded castings. Because pattern making involves working with the harder metals such as iron, steel, and beryllium copper, it approaches tool and die work.

Paramount in pattern accuracy is the unknown factor of shrinkage. The different pattern metals, the casting alloys, and the types of castings produced in shell molds develop different shrinkages. Since there is no standard allowance for these variances it is necessary to



SHELL cast iron ratchet pawl meant 70 pct saving in machining time by eliminating a milling operation on sprocket end. Part is 3-5/32 x 1 in., with 0.006 in. allowance in hole for reaming. Absence of hard spots means easier reaming.

IRON bracket is shell cast for 30 pct weight saving over sand casting; also has superior finish and cuts necessary machining by 70 pct. Part base is 3-5/16 in., height is 2-5/16 in. Hole centers are cast within 0.005 in.

"The final master pattern is made after calculating all the expected shrinkage variations . . ."

use the trial and error method to determine them. Then a master pattern is made.

As a general rule the firm makes a preliminary pattern based on estimated shrinkage and then runs a trial lot of castings. Where holes are to be cast, their pattern locations are calculated and center punched according to the estimated shrinkage. The final master pattern is made after calculating all of the shrinkage variations that can be expected in a production run.

Next in importance at the Emmaus plant is to lay out the patterns, locate them on plates and arrange the gating and risering for horizontal or vertical pouring. Gating and risering for shell molded castings is similar to sand casting practice except that more consideration must be given to calculating the size of sprues and ingates.

Care must also be used in developing and locating feeders and risers. Rather than establish horizontal or vertical pouring as a standard method, the firm studies each job carefully. In some cases trial runs are made to determine the best method.

Number of patterns on the plate and their location must also be considered for proper location of ejector pins. For best results a choice must also be made between (1) full shells using full size plates for cope and drag, or (2) half plates, where cope and drag are on the same plate with the breaking strip in the center.

The half-plate method has two advantages. First is the lower cost of pattern equipment. Second is the increased production possible by using two pattern types on the same two-place machine. A third advantage also occurs with small castings, namely, that closer vertical dimensions can be maintained because half shells are easier to hold together.

Next in importance for pattern accuracy is the number and location of ejector pins. These control the uniform stripping of a flat shell from the pattern. Improperly ejected shells are warped and will not produce accurate castings.

Some deviation from a flat, true surface is also caused by cooling rate variations on different sections of the newly ejected shell. And to some extent shell investing, curing conditions and sand-resin mixes affect the degree of shell plasticity at the time of ejection.

To insure uniformly ejected shells it is sometimes necessary to locate line guide pins close to high lifts or draws. The pins guide the shell and eliminate sagging at these draw and lift points.

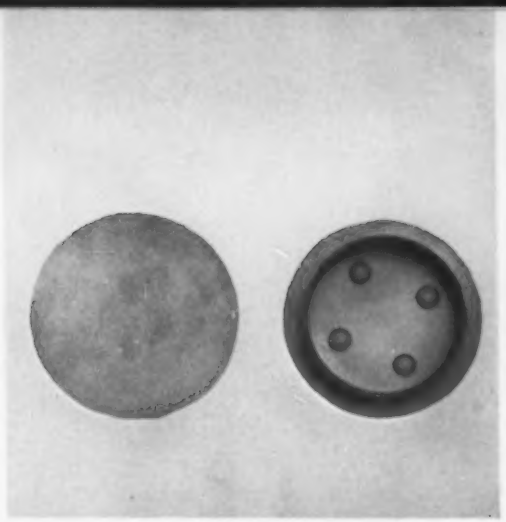
Selecting the material for the pattern-mounting plate is also important. The company has experimented with aluminum, steel, high test irons and ordinary gray irons that have been stress-relieved. But it finds that ¾-in. thick cold rolled steel plates ground to tolerances give the best results.

Rolled or cast plates cost less

Rolled or cast aluminum pattern plates are cheaper, with the cast plates being somewhat superior. But both types are subject to warpage after repeated heating and cooling.

Pattern operating temperatures can also affect casting quality. Temperature differences between the pattern, the plate and the heating medium will warp shells. The firm finds that a

THICKNESS of this shell cast iron drive bracket goes from 3/8 in. to 1-1/16 in.; length is 4-17/32 in. Shell casting produced superior surface finish, cut machining 70 pct. Slot dimensions are held within 0.004 in. Holes require only reaming.



GAGE case is 5-5/16 in. in diam, 1-11/16 in. high. When cast in sand these parts had poor finish and hard spots that required annealing. Shell casting reduced weight 30 pct, cut machining 30 pct and gave the required finish.

plate temperature between 450° and 500°F gives the best results in reducing shell warpage.

In the investing cycle the company deems it absolutely necessary to vibrate the material boxes for uniform distribution of the resin-sand mix. This is very much like properly ramming a sand mold to avoid the pack-offs that produce castings with irregular outlines.

At the Emmaus plant, the method of holding the shell together varies according to the type of casting being made. In some cases combinations of pasting, and the use of spring clips, bolting, and shot and slag back-up material are necessary.

Locate dowel pins accurately

On other jobs, plain pasting or bonding of the two shells is sufficient. This applies particularly to half shells.

The advantage of pouring with pasted shells is that they can be laid down horizontally on an ordinary sand base without any other backing. Here again the pouring method is important to the final result. A check of the first few castings for tolerances, grain structure, shrinkage, etc., helps to determine the correct pouring method.

Accurately made locating or dowel pins minimize the amount of shift in any set of shell mold patterns. This is particularly important where two parts of the pattern are on separate plates. To avoid shifts and mismatches in such cases, dowels should be accurately machined on the plates.

The success or failure of a shell molding job might also depend on the selection of the proper sand-resin mix. Because there is no all-purpose resin the firm uses the one which gives the best results on any particular job.

For example, a pattern with deep draw, where holes and slots are cored out, requires a long flow resin. Generally, the company finds that the resin content of the mix will be from 5 to 8 pct depending upon the particular job. Various resin brands are kept on hand for experimenting on different types of work.

A good finish on a shell-molded casting also requires finer grain sands. These are somewhat narder to handle but produce better quality castings. Sand mixes at the Emmaus foundry are made with 140 grain fineness.

All ferrous and non-ferrous metals are readily cast in shell molds. But it is not practical to use malleable iron or other compositions where subsequent heat treatment will distort as-cast accuracies.

The company believes that the present investment process for making shells will be obsolete in the near future. It expects that the cold and hot mulled sand process, and the blowing of shells through the use of contour plates will be the next development phase. This process will be faster and will use 1/3 to 1/2 less resin.

It is true that the cost of the new shell-making equipment will be slightly higher, but shell production costs will be lower. This will be due partly to the saving in resin and faster shell production. But the principal saving will come in setting up and preparing the completed shells for pouring.

Water cooled contour plates would be used between the shells. A clamping arrangement using air-operated rams would allow setting 10 to 20 shells firmly in fixtures without breakage or distortion. This would eliminate pasting, holding, or the use of shot or slag for shell backing purposes.

Install Huge Traveling Stacker

◆ COAL HANDLING time has been cut materially by the installation of a mammoth new stacking conveyor system, linking up a ship-to-shore unloading operation for the Great Lakes Steel Corp.

The new traveling stacker was designed and built by Hewitt-Robins, Inc., for the Great Lakes' blast furnace plant operations at Zug Island. It receives coal from self-unloading boats at the rate of 2500 tons per hour compared with 600 tons per hour from the previous installation.

Also, limestone which formerly arrived at the plant on freight cars, is now brought in by self-unloading boats and piled at the rate of 4500 tons per hour.

The coal or limestone is discharged from the self-unloader boat boom conveyor into a large hopper which funnels the material to a 72-in. belt feeder. The rollers or idlers supporting the feeder belt are specially designed to absorb the shock of large lumps of material falling from the hopper onto the belt.

From the feeder the material is discharged into a 60-in. trunkline conveyor and tripped to the tailend of the stacker at any point in its 1200-ft traverse.

It travels back and forth on tracks on concrete walls about 10 ft above yard level. Its main dimensions are: height 72 ft above the rails; the total length from the tail to the tripper to the kingpin of the turntable is 250 ft and the boom, rotating about this point for a total angle of 260° is 140 ft long. This boom can be lowered to 7.5° below horizontal position or be elevated 16° above the horizontal while building the storage pile.

Special built-in safety devices prevent the traveling unit from running off the rails, control the boom elevation and prevent the rotating boom platform from striking other parts of the structure. When the wind registers 35 mph, a horn signals the operator to moor the stacker at the extreme end of the runway. A Robintronic level indicator has been installed to synchronize the ship unloading with the shore plant.

To insure adequate stockpiles, it is planned ultimately to store 500,000 tons of limestone and 350,000 tons of coal each year at this new storage yard for the non-navigation season. Additional tonnages of limestone will be piled for daily use during the months when the lakes are navigable.

TRAVELING stacker at Great Lakes Steel Corp. receives coal at rate of 2500 tons per hr.

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New Technical Literature:

Catalogs and Bulletins

Silicone grease

A silicone fluid-carbon black mixture designed for high temperature, slow speed bearings is described in a 6-page brochure. Performance data is featured in the form of illustrated case histories detailing savings in relubrication schedules, replacement and maintenance costs. Specifications and typical properties are given. *Dow Corning Corp.*

For free copy circle No. 1 on postcard, p. 97.

Metal forgings

Over 20 forging materials—copper, copper base alloys and aluminum alloys—are available along with complete production facilities for your nonferrous metal forging requirements. Illustrations and a chart giving forging data are included in this new bulletin. *Scovill Mfg. Co.*

For free copy circle No. 2 on postcard, p. 97.

Chuck catalog

A complete combination catalog and net price selector showing lathe chuck additions features the visual selection of the desired chuck by immediately locating the model and model number, type, type and number of jaws, chuck size, spindle nose, and net price—all in a few seconds. *Horton Chuck Div., E. Horton & Son Co.*

For free copy circle No. 3 on postcard, p. 97.

Channel pipe

Installation features and specifications on new vitrified clay products for handling and disposal of highly-corrosive industrial wastes are given in a 4-page circular. The pipe is chemically inert to virtually every known corrosive found in industrial waste, and is manufactured in double sections. *Logan Clay Products Co.*

For free copy circle No. 4 on postcard, p. 97.

FOR YOUR COPY

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, page 97.

Grinding process

A publication entitled "A Modern Perspective of the Grinding Process" describes grinding in detail and includes interesting illustrations. A bibliography is also given. Topics touched upon include: polishing, effect upon the abrasive, effect upon the chip, abusive grinding, taper sectioning and thermal and mechanical stresses. *Mellon Institute of Industrial Research.*

For free copy circle No. 5 on postcard, p. 97.

Cooling towers

A new line of cooling towers with capacities from 15 through 100 tons at 75° wet bulb and a water saving efficiency of up to 97 pct has been announced. The towers are exceptionally compact for their ratings, require little or no maintenance of pack surfaces. Catalog contains complete information and an easy-to-use formula for estimating your own water savings. *Acme Industries, Inc.*

For free copy circle No. 6 on postcard, p. 97.

Steel buildings

Descriptive copy is worked around a cut-away view of a typical all-steel fully-insulated building in a new bulletin. Sections are devoted to the all-steel strength of these structures and the fully-insulated and water-tight design. Describes why the buildings are especially flexible. *Brookville Mfg. Co.*

For free copy circle No. 7 on postcard, p. 97.

FREE TECHNICAL LITERATURE

Forging

Something new and different in the way of company brochures is now available. Developed as a reference for service and facilities that are to be expected from modern sources of supply, the brochure gains a practical quality that permits the reader to perceive applications of bolt and forging facilities to his own problems. This colorful brochure should be of interest to all who buy, design or specify component parts. *Columbus Bolt & Forging Co.*

For free copy circle No. 8 on postcard, p. 97.

Electrical power

A 31-page booklet emphasizes through illustrations and test material, the extensive facilities available and necessary for developing, producing, and testing aircraft electrical systems and components. Subjects included are engineering, development, environmental, mechanical, load tests, manufacturing facilities. *Westinghouse Electric Corp.*

For free copy circle No. 9 on postcard, p. 97.

Combustion control

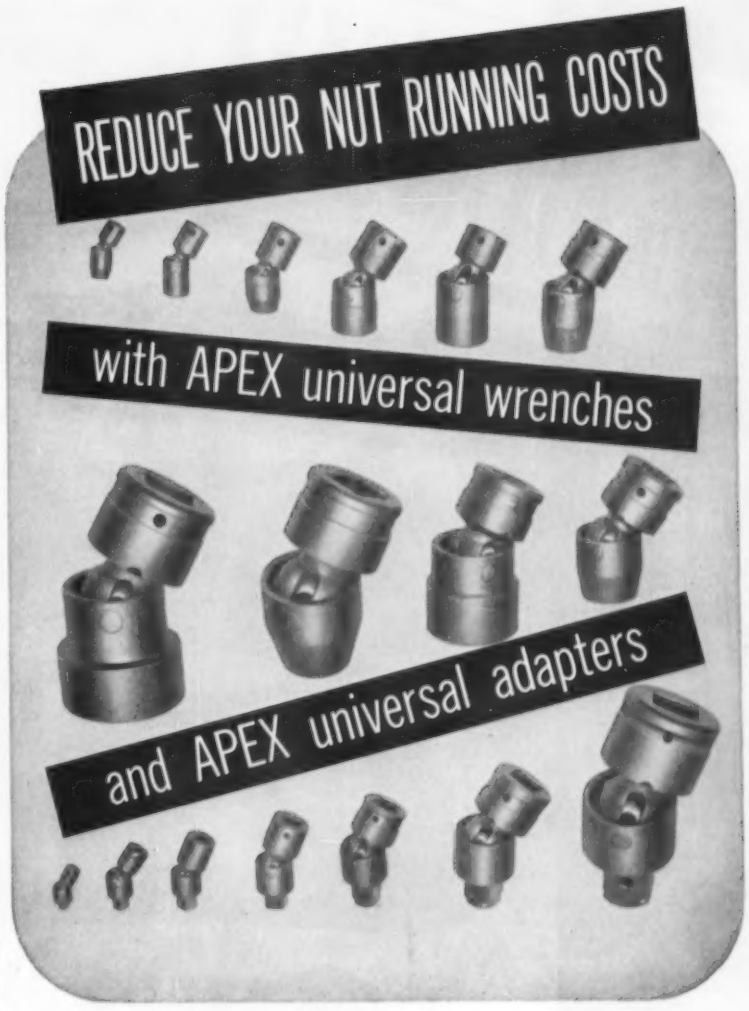
A factual and photographic round-up of how automatic combustion control systems are being used with various types of gas-fired boilers is presented in this bulletin. Pictorial diagrams show the application of control equipment as the boilers increase in size. Basic information about good combustion control practices for gas-fired steam generators is presented. *Hagan Corp.*

For free copy circle No. 10 on postcard, p. 97.

Electrolizing

How electrolizing increases life and efficiency of parts subjected to wear, abrasion and corrosion is described in a 16-page bulletin. This process can be applied to all steels and most nonferrous metals. According to the bulletin, coefficient of friction of parts so treated is reduced as much as 50 pct and wear life extended 2 to 10 times. Case histories are included. *The Electrolizing Corp.*

For free copy circle No. 11 on postcard, p. 97.



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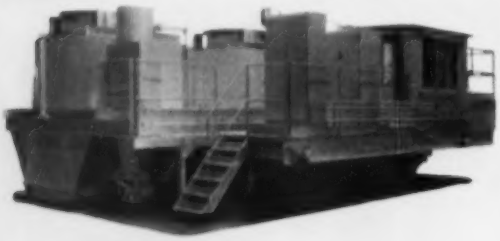
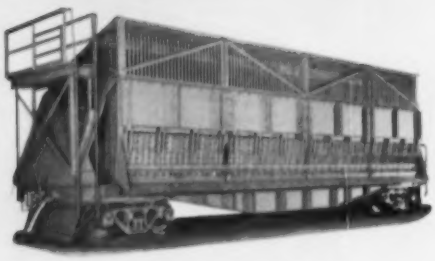
Making coke is a specialized business, and requires special equipment like the cars below. Coke plant operators prefer Atlas Cars because they are dependable.

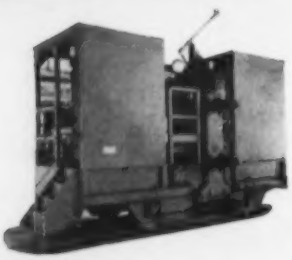
3 HOPPER COAL CHARGING CAR



COKE QUENCHER



HYDRAULIC DOOR MACHINE



40-TON COKE TRANSFER CAR

THE ATLAS CAR & MFG. CO.

ENGINEERS MANUFACTURERS

1140 IVANHOE RD. CLEVELAND 10, OHIO, U. S. A.

FREE TECHNICAL LITERATURE

Power presses

A new 45-ton press is illustrated and described. Specifications are tabulated, and features such as the built-in steel tie rods, and the extra heavy 4-in. crankshaft at main bearings are included. *Sales Service Machine Tool Co.*

For free copy circle No. 12 on postcard, p. 97.

Coolant odors

A colorful new booklet describes in detail the causes of "Monday morning odors, odor producing bacteria and dermatitis," and gives in simple language the procedure necessary to eliminate odors caused by rancid water soluble coolants. Contains instructions on how to keep a machine free of offensive coolant odors. *S. C. Johnson & Son, Inc.*

For free copy circle No. 13 on postcard, p. 97.

Batteries

New bulletins cover complete line of lead-calcium and lead-antimony batteries for control, switchgear, and auxiliary power application. Specifications include data on battery ratings and capacities, details of design and construction, dimensions, weights, and types of containers. *C & D Batteries, Inc.*

For free copy circle No. 14 on postcard, p. 97.

Roof temperatures

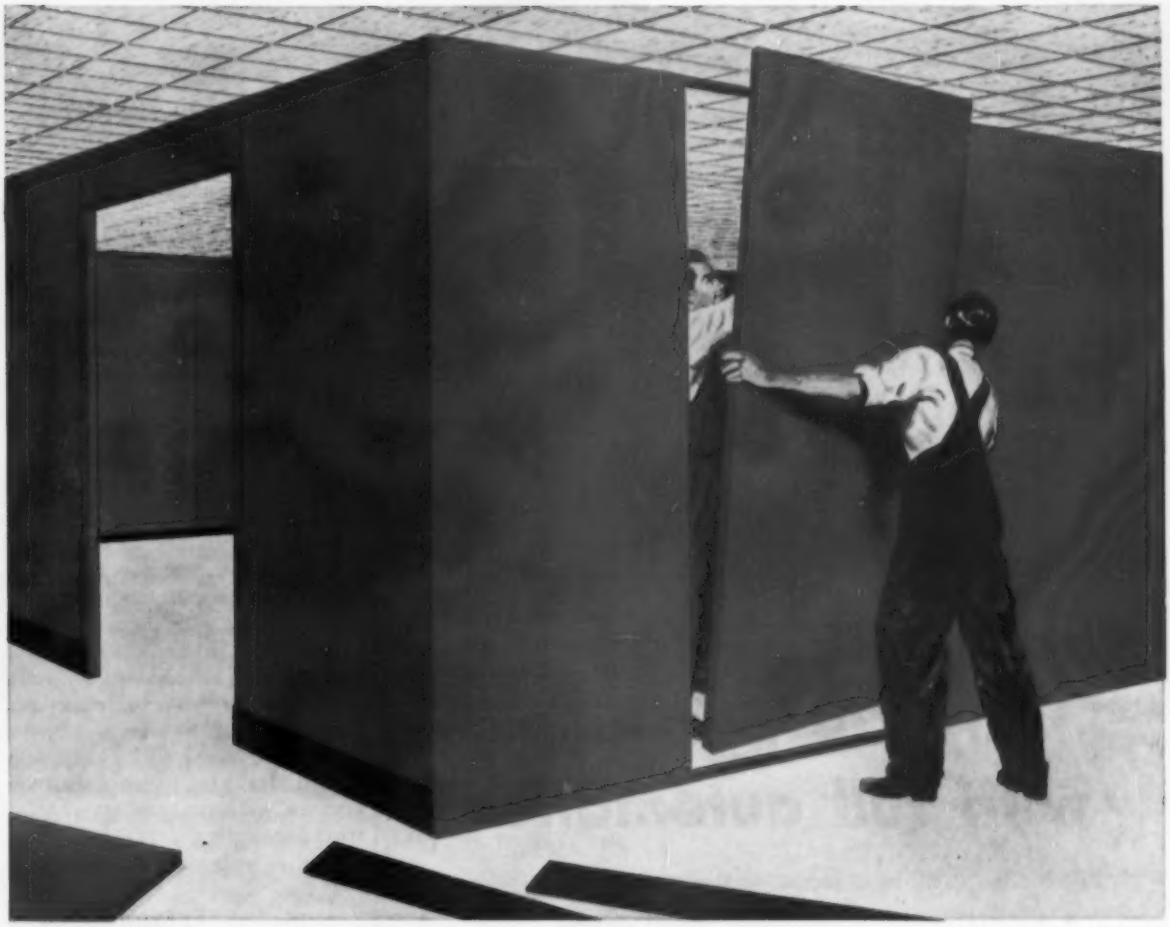
Two process data sheets describe the recording and/or controlling of openhearth roof temperatures with L & N Rayotube detectors and Speedomax recorder - controllers. Topics discussed include the target brick method, the control system, the direct-sighting method, circuit compensation and precise control. *Leeds & Northrup Co.*

For free copy circle No. 15 on postcard, p. 97.

Industrial fasteners

A bulletin which describes and illustrates an exclusive line of die-cast zinc alloy industrial fasteners is available. It includes recently introduced round-head thumb nuts and thumb screws. Contains diagrams with complete specifications and lists of stock sizes. *Gries Reproducer Corp.*

For free copy circle No. 16 on postcard, p. 97.



Anticipate change with movable steel walls

Business can't afford to straitjacket efficiency by the expense, dirt and confusion involved in the relocation of interior masonry walls.

That's why easily installed movable walls made of steel are hailed as the economical way to preserve office flexibility and retain structural stability.

J&L helps manufacturers of movable steel walls build dependability and attractive appearance into these modern partitions. J&L furnishes the basic raw material—high quality sheet steel.

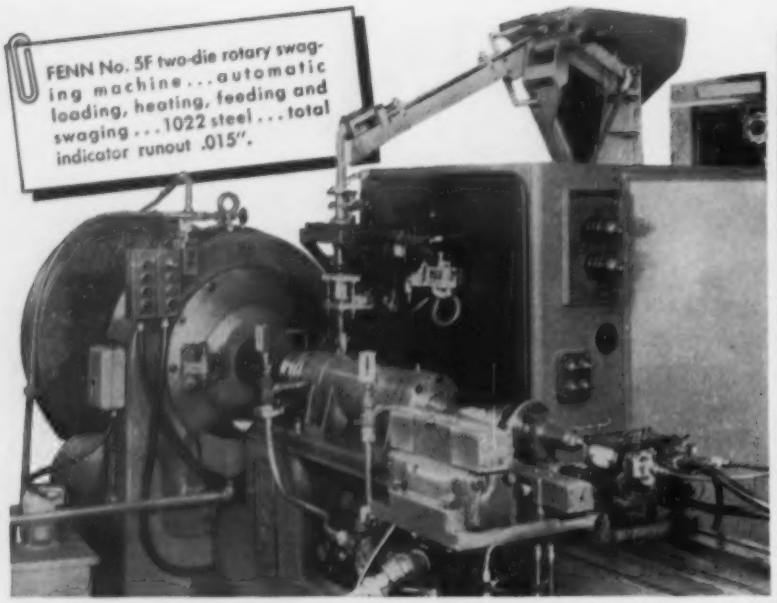
The acceptance accorded J&L Sheet Steel by movable wall builders shows how quality control is coupled with J&L's understanding of product end-use. Thus J&L assures customer satisfaction.

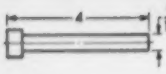
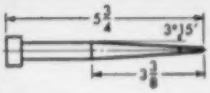
J&L offers you the same quality. Whatever your requirements for formability, uniformity and drawing qualities, you can depend on J&L for sheet and strip steel. Get the best out of your production equipment and add to the value of your finished product.

J&L STEEL

Jones & Laughlin
STEEL CORPORATION — Pittsburgh

Serving Steel Users Everywhere—linked by water to the Middle West and South


FENN No. 5F two-die rotary swaging machine . . . automatic loading, heating, feeding and swaging . . . 1022 steel . . . total indicator runout .015".

Change  to  at 500 per hour with full automation

FENN offers to the metal industry . . .

- a completely new and automatic swaging package
- with full automation in loading and feeding
- plus the material and labor savings inherent in swaging.

Now, more industries can profit from hot or cold swaging. Present users of swaging machines can greatly increase their productivity. Or we can design a complete assembly to suit your requirements.

Precision Rolling Mills — Turks Heads — Wire Shaping Mills — Swaging Machines — Accessories.

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Please send me more information about your Rolling Mills ☐, Swaging Machines ☐, Turks Heads and Wire Shaping Mills ☐.

*Name*_____ *Title*_____

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Cutting machines

A booklet giving brief details of a selection of Besco sheet metal and plate working machines and presses, with full specifications on request, is available. Included among the machines are: high production motorized swing beam universal folding machines, circle cutting machines, throatless shearing machines, all steel unbreakable box and pan folding machines. *F. J. Edwards, Ltd.*

For free copy circle No. 17 on postcard, p. 97.

Locomotives

Manufacturing facilities and products are described in an illustrated booklet which includes an invitation "to consider Montreal Locomotive Works in your plans for a future in Canada." In addition to its line of diesel locomotives, products include heat transfer equipment for the petroleum, chemical and power industries; steel mill equipment; welded steel pipe for dredging operations, industrial radiators. *Montreal Locomotive Works, Ltd.*

For free copy circle No. 18 on postcard, p. 97.

Extend-A-Forks

All the features, specifications and dimensions of a new electric truck with Extend-A-Forks are outlined in this bulletin. Designed to provide greater aisle operating efficiency through forks which extend beyond the outrigger wheels to pick up and deposit loads, this feature permits stacking with no straddling of the load. *Yale Materials Handling Div., Yale & Towne Mfg. Co.*

For free copy circle No. 19 on postcard, p. 97.

Nondestructive testing

An interesting bulletin illustrates and briefly explains testing products and services for railroads and industry. Electrical and electronic instruments for testing include one for detecting defects, one which measures thickness of materials from one side only, one for detecting defects in tubing and bar stock. If needed, both service engineer and equipment are provided. *Sperry Products, Inc.*

For free copy circle No. 20 on postcard, p. 97.

FREE TECHNICAL LITERATURE

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcar .

This section starts on p. 92

Wheel brush chart

A helpful wheel brush selector chart has just come out. Just set diameter of wheel brush at type of brush in top window of the chart and check the desired dimensions to discover which wheel brush to order. *Fuller Brush Co.*

For free copy circle No. 21 on postcard, p. 97.

Tool room lathe

The new push button infinite spindle speed control and independent variable electric feed for carriage and cross slide for a new lathe is described in a 24-page bulletin. It covers all cost cutting, high speed, and precision operating features of the lathe, gives complete specifications and tooling accessories. *Hardinge Brothers, Inc.*

For free copy circle No. 22 on postcard, p. 97.

Lubrication

An 8-page bulletin describes the advantages of centralized lubrication for small machines or equipment with a limited number of bearings. Shows what the Multival system is, how it works, where it can be used, how it eliminates guesswork incident to grease gun lubrication. *Farval Corp.*

For free copy circle No. 23 on postcard, p. 97.

Power generation

A profusely illustrated booklet dealing exclusively with the power industry has just been released. Gives concise descriptions of various projects which have been completed and are in progress. *Kaiser Engineers Div., Henry J. Kaiser Co.*

For free copy circle No. 24 on postcard, p. 97.

Standard shapes

An interesting 60-page book describes and illustrates standard shapes available from existing tooling at Harvey Aluminum. The catalog was prepared to assist manufacturers, fabricators, and engineers who utilize standard aluminum sections. Indexed for easy reference, it also lists sizes, dimensions, weight, etc. of shapes. *Harvey Aluminum Sales, Inc.*

For free copy circle No. 25 on postcard, p. 97.

2,000,000 volts

Two bulletins are offered, describing in great detail a 2-million volt x-ray generator and a 1-million volt generator for radiography. The latter, a model which is specifically designed to fill a long-standing need for an economical, transportable source of one-million-volt x-rays, can be mounted on a battery-operated lift truck. *High Voltage Engineering Corp.*

For free copy circle No. 26 on postcard, p. 97.

Drilling machine

A machine which drills holes faster and better than ever before is fully described in a comprehensive, illustrated bulletin. Contains information on all cost cutting features including the Edlund 1F Vari-Speed Drive with infinitely variable speed, Micrometer Graduated Depth Control, and Spindle Tension Control. *Edlund Machinery Co.*

For free copy circle No. 27 on postcard, p. 97.

Turn Page

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THE IRON AGE
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Couplings

A new bulletin illustrates and describes spindle shaft couplings specially designed for rolling mill service. It contains information and illustrations on the design which is responsible for their performance under severe rolling mill service. *Ajax Flexible Coupling Co., Inc.*

For free copy circle No. 28 on postcard, p. 97.

Rods

A 4-page folder on Teflon rods describes the physical properties of the two grades of Teflon available in rod form to fabricators of finished Teflon parts. Points out typical uses for the rod, gives complete price and size information. *The Garlock Packing Co.*

For free copy circle No. 29 on postcard, p. 97.

Helical gears

Information on specification, construction design, testing and various applications is offered in a new bulletin on gears. It gives details on lubrication, diagrams, and application charts listing dimensions in inches as well as illustrations of parts. *Worthington Corp.*

For free copy circle No. 30 on postcard, p. 97.

Joints

Applications, engineering data, models and sizes, proper joint selection are covered in a 12-page illustrated catalog, which also describes constant velocity, the principle on which the joints are designed. This type of joint design, according to the manufacturer, provides maximum uniform flow of power, capacity, and length of life. *Gear Grinding Machine Co.*

For free copy circle No. 31 on postcard, p. 97.

Forged tools

A folder describing in detail forged high-speed steel tools that are guaranteed to outlast and outperform conventional high-speed steel tools is available. Illustrates difference between tools machined from blanks and tools that are forged. Includes standard forged tool chart. *Nelco Tool Co.*

For free copy circle No. 32 on postcard, p. 97.

FOR MORE LITERATURE
Many companies offer free literature and other information in their advertisements. For the names of these firms see the company listings in the index of advertisers.

Cemented carbide

Selecting the proper grade of cemented carbide for use as a cutting tool for a particular cutting job is as important as choosing the right machine to do the job, according to a new booklet. The 24-page publication points out that proper understanding of various grades of carbides for cutting metals, fibers, plastics and rubber results in better finishes, greater accuracy and longer tool life. *Carboloy Dept., General Electric Co.*

For free copy circle No. 33 on postcard, p. 97.

Data sheets

Technical data sheets list chemical and physical properties of two grades of electrolytic nickel powder. Physical property and hydrogen loss tests are by Metal Powder Association standard methods. *Plastics Metals Div., National Radiator Co.*

For free copy circle No. 34 on postcard, p. 97.

Surface grinders

Various surface grinders are described in this new illustrated catalog. Specifications are given and auxiliary equipment is shown. A helpful clearance chart and diagram is included in this interesting booklet. *Thompson Grinder Co.*

For free copy circle No. 35 on postcard, p. 97.

Drill heads

A 24-page catalog describes feed units, tapping units, hydraulic drill presses, index tables, fixed center and adjustable center drill heads. Also information on multiple drilling applications, the recommended coolants for various materials and horsepower required for drilling. *Michigan Drill Head Co.*

For free copy circle No. 36 on postcard, p. 97.

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Contact KAYDON Muskegon

FOR ALL TYPES OF BALL AND ROLLER BEARINGS: 4" BORE TO 120" OUTSIDE DIAMETER

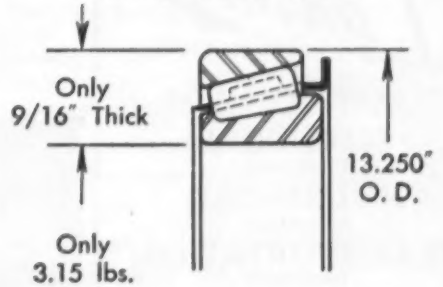
KAYDON single row, tapered roller bearings 12.125" x 13.250" x .718"
Total bearing weight: 3.15 lbs.

KAYDON creates world's THINNEST tapered roller bearings—REALI-SLIM as a wedding ring

Here's another first by **KAYDON** of Muskegon. We now offer the *thinnest* single row, tapered roller bearings ever made. Even a bride's modern wedding ring, made to proportionate size, would not be as thin or light in weight as one of these *Reali-Slim* bearings.

If you're faced with bearing problems, which involve conserving space and weight, consult **KAYDON** while your product design still is on the drawing board. Remember — for standard bearings or bearings of unusual design you can depend on **KAYDON** for the engineering skill and manufacturing facilities to do your job. It pays to contact **KAYDON** first!

Details of thin section, lightweight bearing shown above



Write for engineering catalog!

For complete data on capacity, seals, separators, standard and *Reali-Slim* "wedding ring" bearings, ask for catalog No. 54.

THE KAYDON ENGINEERING CORP.

MUSKEGON • MICHIGAN

KAYDON types of Standard and Special Bearings:
Spherical Roller • Taper Roller • Ball Radial • Ball Thrust
• Roller Radial • Roller Thrust • Bi-Angular Bearings

K-551

PRECISION BALL AND ROLLER BEARINGS

Metal Stamping Facilities
by Lansing
at your Service for...
ELECTRICAL EQUIPMENT
HOUSEHOLD APPLIANCES
TRANSPORTATION EQUIPMENT
INDUSTRIAL EQUIPMENT
FARM IMPLEMENTS
Lansing Stamping Co.
ESTABLISHED 1914
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PRESSES: Built for Extrusion

Three big extrusion presses, built under the Air Force heavy press program, have been completed . . . Presses will be placed in service in Maryland and California.

Three extremely large, horizontal metal extrusion presses, important units of the U. S. Air Force heavy press program, are now completed.

Two of these giant machines will be placed in service at Kaiser Aluminum & Chemical Corp., Halethorpe, Md., and one at Harvey Machine Co., Torrance, Calif.

The extrusion presses were designed by Loewy Construction Co., Inc. Two of the presses were built by Farrel-Birmingham Co., Inc. Most of the work, including assembly, was done at the company's Rochester division, Consolidated Machine Tool Co. The FB Connecticut plants at Ansonia and Derby furnished a substantial number of components and some of the machine work was done at Ansonia.

Weigh About 1500 Tons

These presses, among the largest machines ever built and completely erected in a manufacturer's plant prior to final installation, measure 130 ft in length, excluding auxiliary equipment. Each is 18 ft wide and 18 ft high. The total weight of each is approximately 1500 tons.

Description, identical for both presses, includes:

Capacity: 3 pressure stages, 2700, 5400 and 8100 tons; main cylinder stroke, 144 in.; piercer cylinder stroke, 206 in.

The hydropneumatic accumulator station has a maximum operating pressure of 4500 psi. Number of operating cycles are 24 per hour.

The presses are equipped with billet containers 65 in. in length and are designed to handle billets up to 26 in. OD.

Large extrusion press . . .

WANT MORE DATA?

You may secure additional information on any item briefed in this section by using the reply card on page 97. Just indicate the page on which it appears. Be sure to note exactly the information wanted.

Power:

Electric governor increases control of power output.

An electric governor that can control the output of engine-driven generators with greater accuracy than any previous control has been developed jointly by Westinghouse Electric Corp. and the U. S. Army Corps of Engineers' engineering research and development laboratories.

The new electric governor will provide more accurate regulation of electric power producing equipment than even the most efficient mechanical governors available today. Such precise regulation is needed for many industrial and military applications.

Meets Growing Need

The new device will be made at the Westinghouse plant in Buffalo and a new organization, the electric governor project, has been in-

corporated into the Buffalo plant operation. The group will be responsible for engineering, manufacturing, and selling the unit.

Development of the electric governor is directly connected with a trend in recent years toward higher performance in electrical equipment which has necessitated more accurate control of prime movers.

Cleaning:

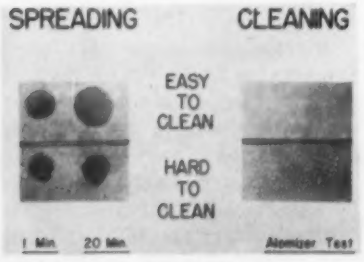
AES program helps solve oil removal problems.

The spreading rate of an oil on metal can now be used to predict how difficult the oil will be to remove. The test is of particular value to metal fabricators, electroplaters and other metal finishers who usually use oils of unknown chemistry. These oils, while essential to metal working and corrosion prevention, must be removed before painting or electroplating.

According to Prof. H. B. Linford of Columbia Univ., it is not necessary to know the composition of oils used for lubrication, cutting aid or rust protection in order to tell how hard it will be to clean a metal. The user will now be able to test an oil by watching how fast a drop spreads over a clean sample of the metal.

Watch Spread Rate

Laboratory work on metal cleaning, sponsored by the American Electroplaters' Society, discovered evidence that such a relationship might exist. Further work by Columbia has very definitely developed the relationship between ease of oil removal and its spreading rate. The rate for any oil was



Action compared . . .

Keep your eye on Buckeye

and these completely different pocket-size air tools!

You've never seen air tools like the NEW Buckeye L Series drills, screwdrivers and nutrunners. A tornado of air power, hushed to a gentle purr, is packed into these little tools, built for full-scale production use.

Now—enjoy the advantages of Buckeye power tool operation on any drilling or fastening job, even those on which tools are used only intermittently. With these new L Series tools available, manual drilling, screwdriving and nutrunning becomes an expensive, outmoded luxury.

Just send a letter or postcard with your name, address and the words "L Series Tools," and we'll forward complete information by return mail.

Buckeye Tools CORPORATION
DIVISION 11 • DAYTON 1, OHIO

producers of the world's first successful rotary air tools

3 good reasons for buying COOPER ALLOY stainless steel FITTINGS

- **AVAILABILITY.** Our network of stocking-distributors with warehouses and branches in every major industrial city, is backed up by our own extensive stocks in Hillside, New Jersey and Oakland, California to insure delivery when you need it.
- **QUALITY.** As the world's largest and most experienced producer of stainless steel fittings, with the most complete production and inspection facilities, COOPER ALLOY sets the quality standard for the entire industry.
- **COMPLETE LINE.** Whatever your needs . . . whether for screwed, flanged, welding or Quikupl fittings, you will find what you're looking for in the COOPER ALLOY line.

SCREWED. All pipe threads on COOPER ALLOY stainless steel fittings are checked to American Standard Tapered pipe thread gauges, and the use of special tools and equipment assures full threads, accurately gauged and perfectly aligned in all planes.

FLANGED. General dimensions of COOPER ALLOY stainless steel flanged fittings conform to standards set by the American Standards Association for steel flanged fittings . . . or to Manufacturer's Standardization Society specifications for corrosion resistant flanged fittings.

WELDING. COOPER ALLOY stainless steel welding fittings are manufactured in accordance with ASA standards where applicable. They are made of forged or rolled stainless steel; all fittings are of uniform wall thickness and the ends, where wall thickness are greater than .083", are accurately machine tool cut and beveled.

QUIKUPL. These patented stainless steel fittings are designed for quick assembly without threading, welding or flaring. They cut installation or disassembly costs to a minimum, and are ideal for permanent or temporary use.

Write today for copy of Fitting Catalog 52F

COOPER ALLOY
CORPORATION · HILLSIDE, N.J.
Valve and Fitting Division

found to depend on the roughness and the kind of metal being used.

Dr. Earl J. Serfass of Lehigh University, the A. E. S. Research Chairman, pointed out that the new test is of value beyond the metal cleaning field. Data obtained, may help develop more tenacious rust preventives, stronger filmed motor lubricants and more durable wax finishes. On the other hand, cutting tool coolants and lubricants that are more easy to remove may speed industrial production without loss of tool life.

This important study will be extended to cover greases and similar materials according to the Society which supports and directs an extensive industry sponsored research program at a number of institutions.

Honing:

Spline honing eliminates annealing operation.

A honing machine, designed for a broad range of honing operations, is being built by Micromatic Hone Corp., Detroit. One adaptation of this model of the Hydrohoner, is used for spline honing in which hardened gears are processed so the bearing surfaces of the splines are generated concentric with the pitch of the teeth, straight and round, and have a finish that will not pick-up and gall the shaft.

Previously it was necessary to anneal these surfaces before final machining operation with resulting soft bearing surfaces. Character of the finish made it difficult to fit the shafts to the gears in 0.0002-in. increments because the soft surface tended to pick and gall the shaft.

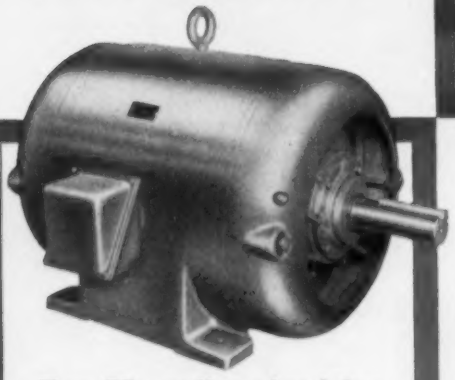
Vary Cutting Path

Microhoning solved this problem because surface hardness does not affect spline honing. Instead, the problem was to obtain proper tool actuation in the confined area.

This is particularly significant because, unless heat-treatment is controlled very carefully, the hole may be out-of-round and tapered as much as 0.006-in. when it

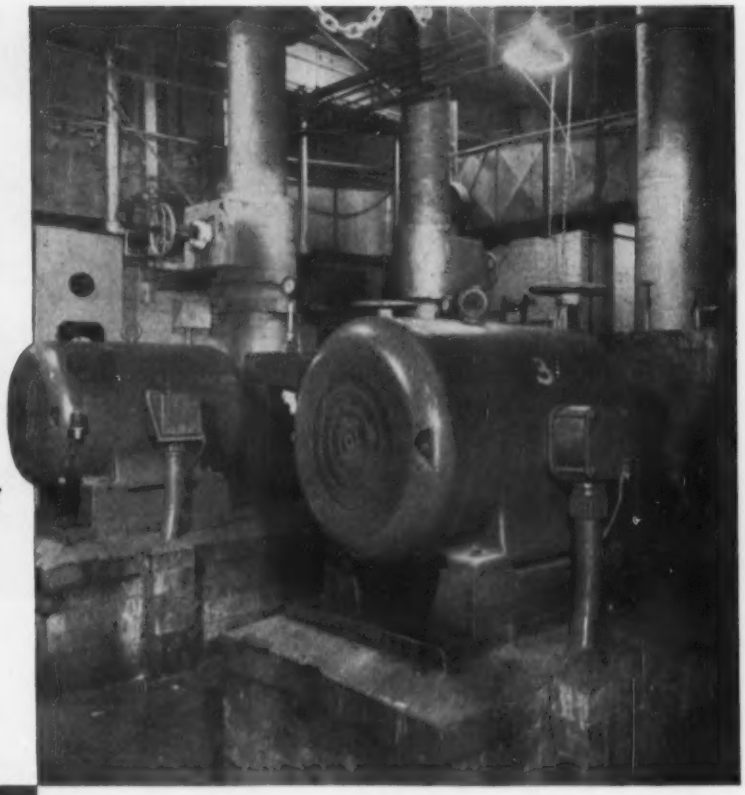
Wagner®
ELECTRIC MOTORS
...the choice of leaders in industry

use WAGNER Cast Iron Frame Motors for *EXTRA PROTECTION* in corrosive atmospheres



Type EP, totally-enclosed fan-cooled. Available in ratings from 2 to 250 hp.

Type JP, non-ventilated. Explosion-proof. ½ through 1½ hp.



These 150 hp Wagner Cast Iron Frame Motors drive brine pumps in an acid area at Celanese Corporation's Rock Hill, S. C. plant.

If the motors in your plant are subjected to corrosive fumes and liquids, Wagner Cast Iron Frame Motors will provide the *extra protection* you need.

These stock motors are totally-enclosed in corrosion-resistant cast iron. All parts exposed to the atmosphere are fabricated of corrosion-resistant material—even the nameplate. Features include completely protected laminations . . . special varnish treated windings . . . a running shaft seal.

Wagner Cast Iron Frame Motors are available in fan-cooled standard and explosion-proof types in ratings from 2 to 250 hp, and in non-ventilated standard and explosion-proof types in ratings from ½ through 1½ hp. Wagner Bulletin MU-132 gives complete information.

A skilled Wagner engineer will help you select the Wagner Motor to meet your most exacting specifications. Call the nearest of our 32 branch offices, or write us.

Wagner Electric Corporation
EST. 1891

WAGNER ELECTRIC CORPORATION
6403 PLYMOUTH AVE., ST. LOUIS 14, MO., U.S.A.

BRANCHES AND DISTRIBUTORS IN ALL PRINCIPAL CITIES

ELECTRIC MOTORS
TRANSFORMERS
INDUSTRIAL BRAKES
AUTOMOTIVE BRAKE SYSTEMS—AIR AND HYDRAULIC

M55-7

LEADING NONFERROUS DISTRIBUTORS in the United States and Canada now maintain large stocks of "Berylco" beryllium copper strip and rod, ready for immediate delivery—an indication of the wide acceptance for this versatile alloy.

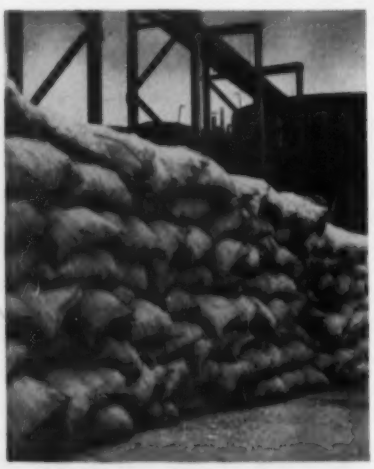
New marketing set-up saves you time and money

WAREHOUSE DISTRIBUTORS NOW STOCK "BERYLCO" BERYLLIUM COPPER FOR IMMEDIATE DELIVERY

Few industries these days have to be told about the advantages of beryllium and its alloys, particularly beryllium copper. The remarkable qualities of this alloy—its combination of strength and conductivity, its elasticity, its fatigue and corrosion resistance, its workability, its castability—have improved many old products, created many new ones.

And today, more than ever before, it looks as though beryllium copper is on its way to mass-production use. Raw materials, the Government says, are sufficient for both civilian and defense needs. The world's largest producer of beryllium copper, THE BERYLLIUM CORPORATION, has just completed a $2 million expansion program which will result in greater production, more forms, more sizes, closer tolerances, and, in some cases, lower prices. To top off this rosy picture, the appointment of a national network of distributors now makes popular sizes available for immediate delivery.

Testing samples are always available free of charge, and technical assistance is yours for the asking.



SUPPLIES OF BERYL ORE, raw material of the beryllium industry, are now more than adequate, according to the Bureau of Mines. An independent survey of world resources undertaken by THE BERYLLIUM CORPORATION drew the same conclusion.

BERYLCO ®

THE BERYLLIUM CORPORATION

DEPT. 5C, READING 6, PA.

STOCKED BY WAREHOUSE DISTRIBUTORS THE COUNTRY OVER

In honing splines, the tool sweeps across the spline with an oscillating motion.

reaches the honing operation. To remove this amount of stock and correct inaccuracies, the cutting path of the abrasive grit must be varied and all stones dressed an equal amount.

Stone for Each Spline

In conventional honing jobs, this is accomplished by rotating the tool as it reciprocates through the bore. To hone splines, tools are designed with a stone for each spline, the stone about half as wide as the spline. Rotation is replaced by an oscillating motion. The stone is swept across the spline as the tool is reciprocated. To get full surface coverage by all the stones, the part is indexed periodically during the honing cycle.

In this operation, this machine processes forged steel 58 to 60 Rc hardness. It removes 0.002 to 0.006-in. stock on the diameter, holding out-of-roundness and taper to less than 0.0003-in. Finish is 15 to 20 micro-inches rms. Size is held so shafts can be fitted easily with 0.0002-in. minimum clearance. The model has a cycle time of 35 to 40 sec per gear, and turns out 350 to 450 gears in an 8-hr shift.

Illumination:

Translucent plastic panels improve plant lighting.

To improve plant lighting without installing new fixtures and to eliminate broken window replacement costs, Fulton Iron Works Co. of St. Louis is replacing window glass with translucent plastic material.

At one time, natural light was admitted into the 440-foot building through a continuous stretch of sash and glass panes at roof height. But the quantity and distribution of light reaching the work floor left much to be desired. First step in the new program has been the replacement of glass on

Hand-propelled bridges with electric hoist quickly handle charges of cam shafts.

TRAMRAIL CRANES HANDLE HEAT TREAT CHARGES FASTER

Completely motorized Tramrail cranes handle 4,000 lb. charges of aluminum alloys at electric furnaces and quench tanks.

Cleveland Tramrail cranes not only make the handling of heavy charges in and out of furnaces and quench tanks faster and easier, but they cut "down time" of the equipment during charging and thereby enable more materials being treated per day.

Various types of cranes as well as other Cleveland Tramrail equipment are serving heating treating departments in many prominent plants. Because Tramrail cranes are so smooth and easy running and require practically no maintenance they are particularly suited for this work.

If you have a materials handling problem of any kind, check with Cleveland Tramrail. Most likely they have already solved dozens of similar ones and can offer helpful suggestions. No obligation of course.

GET THIS BOOK!

BOOKLET No. 2008. Packed with valuable information. Profusely illustrated. Write for free copy.

CLEVELAND TRAMRAIL DIVISION
THE CLEVELAND CRANE & ENGINEERING CO.
4832 EAST 284th STREET • WICKLIFFE, OHIO

CLEVELAND TRAMRAIL
OVERHEAD MATERIALS HANDLING EQUIPMENT

What a big difference in *comfort* the HINGED BRIDGE makes!

Your workers will say they never had comfort like they get in the new Willson Contour-Spec—and its new hinged bridge adds an extra measure of protection, too!

It's the *hinge* that permits equal pressure at every point of contact with the face . . . snug comfort regardless of facial contour! And it's the hinged bridge that means extra safety because there are no dangerous gaps around the eyes.

Contour-Specs conform to *any* face—heavy, lean, round, long or bony! Result is, a new concept of comfort combined with protection that encourages workers to wear them willingly.

Let them try Contour-Specs—see how well the 47-mm. lenses suit every eye size—feel how easily the lightweight, snug-fitting Butyrate plastic frame "sits" without pressure anywhere. Order a supply from your Willson distributor now.

NEW *Contour-Spec*®

SAFETY SPECTACLES BY . . .

Design Patent 168788

More than 300 Safety Products Carry This Famous Trademark

WILLSON®

Leaders in Research and Development of Safety Equipment Since 1870

231 WASHINGTON ST., READING, PA.

the west side of the building with a glass-fibre reinforced plastic manufactured by the Alsynite Co., San Diego, Calif.

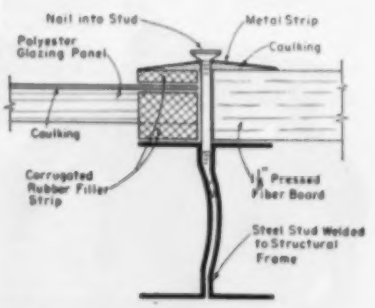
To form the glazing sections, six individual sheets of laminate —each 12-ft high, 26-in. wide, 1/16-in. thick and having 2½ in. corrugations — were assembled into sections 12-ft square. These sections were alternated along the building length with sections of pressed cellulose panels, also 12 x 12 ft. The plastic is tinted light green to provide a pleasant, steady daylight effect.

The new glazing was easy to install. After the old sash was removed, 25/16-in. steel studs were welded on 4-in. centers at the top and bottom of the exposed building framework. The panels were then mounted on the studs. Corrugated rubber strips on both panel sides and caulking along the edges make them watertight and vibration-free.

A total of 120 translucent sheets were used, making 3120 square feet, just half the area formerly provided by the glass. Despite this reduction in light-transmitting area, Fulton reports more useful and effective lighting on the work floor than ever before.

Tint Cuts Glare

Light green tint of the Alsynite panels, combined with glare-free light transmission, makes it unnecessary to follow the practice employed in some plants of painting over glass panes on the sunny side of the building to cut down sunlight and heat.

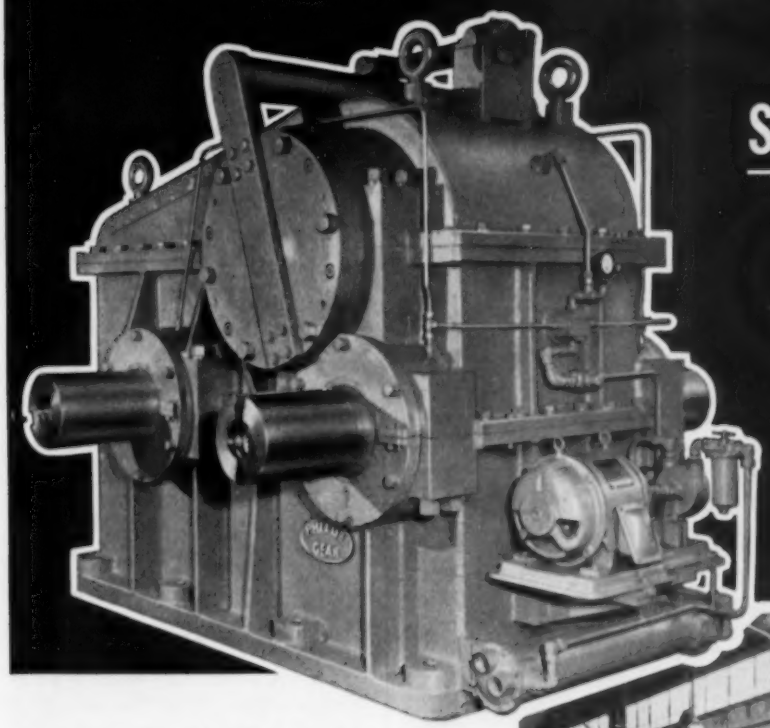


Mounting details . . .

A SPECIAL REDUCER . . .

on a very SPECIAL JOB

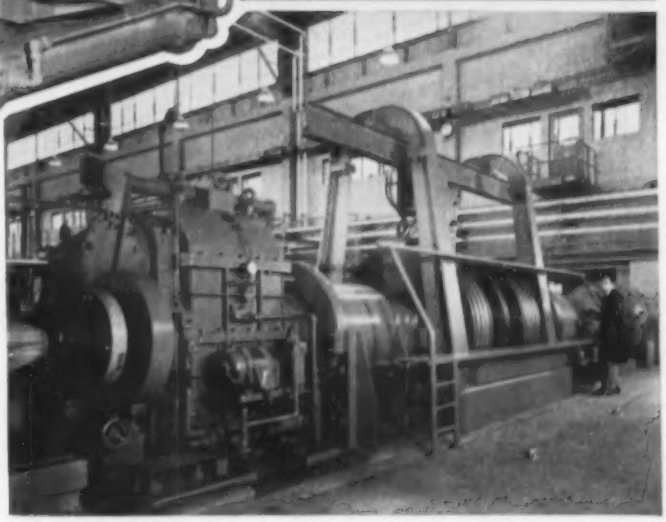
JOHNS-MANVILLE JM PRODUCTS



We are proud that the Johns-Manville Research Center at Manville, New Jersey, called upon us to build the huge, 10 ton specially designed gear-reduction Unit (shown above) to drive the world's largest and most versatile inertia type Dynamometer.

This Philadelphia Unit is driven by a triple speed induction motor set and clutch, and is rated 5,800 HP at 300 rpm. Gears and pinions are double opposed helicals manufactured from alloy steel forgings.

Over the years, many special Speed Reducers and Increasers for various industrial and governmental applications have been designed and built by "Phillie Gear." If you have an unusual or special drive problem . . . consult "Phillie Gear" Engineers and be assured of complete satisfaction.



Inertia-type dynamometer for testing friction materials for aircraft, industrial equipment, railroad, truck, and bus brake assemblies. The components are arranged in tandem. At the far right are the triple-speed induction motor and clutch mechanisms. Following, in order, are the inertia wheel disks, the Philadelphia reduction unit, and the torque stand to which the brake assembly at the left is attached. Complete, the dynamometer weighs 200 tons.

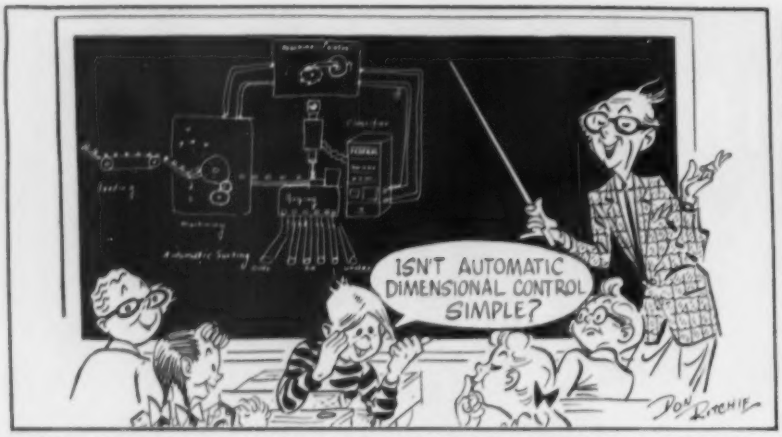
PHILADELPHIA GEAR WORKS, INC.

Industrial Gears & Speed Reducers

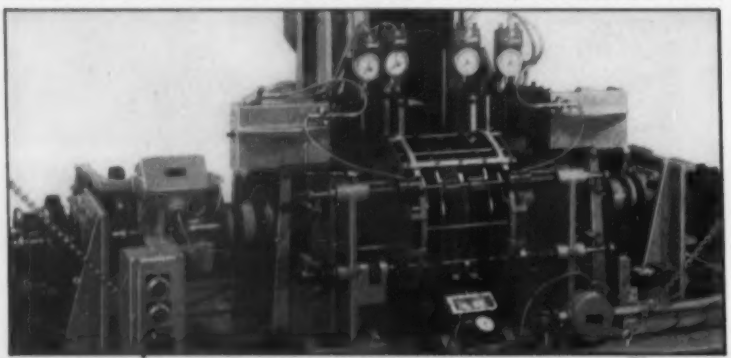
ERIE AVE. AND G ST., PHILADELPHIA 34, PA.
NEW YORK • PITTSBURGH • CHICAGO • HOUSTON • LYNCHBURG, VA
Virginia Gear & Machine Corp., Lynchburg, Va.

LimiTorque Valve Controls

ESTABLISHED 1892



YES, IT'S EASY TO MAKE WORK DIMENSIONS CONTROL THEMSELVES. Hundreds of firms now use Federal Electricator and Electronic Gages to do the job. In contact with work in process, they feed back dimensional information to control machine feeds and speeds, operate signals and stop operations at the end of cycles or when the machine needs major adjustments. Successful applications include various grinding and lapping operations, production of continuous materials and other machine processing operations.



AUTOMATIC 100% IN-PROCESS INSPECTION IS EASY, TOO. Here, a Federal Electronic Gage inspects finished push rods for diameter at each end, presence of oil hole in each end, hardness of each end, overall length and straightness. Gages such as these are set right in the production line. Workpieces are carried automatically from one operation to the gage. Acceptable pieces are passed on to the next operation and unsatisfactory work is rejected. Gages for several different inspections are alternated with the production machines as required.

INVESTIGATE! Your nearby Federal sales engineer can give you up-to-the-minute information on automatic dimensional control or inspection gages. Maybe he'll tell you that Federal has already solved your gaging problem . . . that an existing Federal gage will eliminate costly, time-consuming engineering. In the meanwhile, write for our new bulletin, "Automatic In-Process Gaging". The information in it may save you hours of time and hundreds of dollars.

FEDERAL PRODUCTS CORPORATION
51338 Eddy Street, Providence 1, R. I.

Ask **FEDERAL**

FOR ANYTHING IN MODERN GAGES...

Dial Indicating, Air, Electric, or electronic — for inspecting, measuring, sorting, or automatically controlling dimensions on machines.

Carbides:

Wear resistant parts cut costs, improve quality.

By replacing a number of critical steel parts with cemented tungsten carbide one band saw manufacturer has reduced maintenance and cut costs in his band saw setting operation.

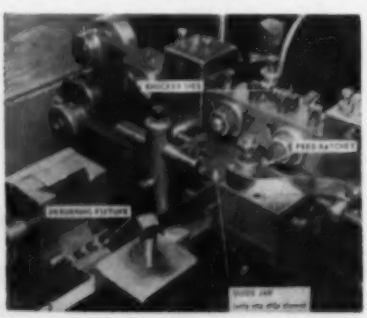
The Henry G. Thompson & Son Co. of New Haven, Conn., manufacturer of profile, band, and hack saw blades has had carbide parts in service for more than three years.

In this band saw setting operation milled stock is fed from a drag feeding reel through deburring blades, then between guide jaws and under an indexing feed ratchet. Next, reciprocating dies set the teeth after which the saw stock is collected on a drag coil reel.

The Blades Remove Burrs

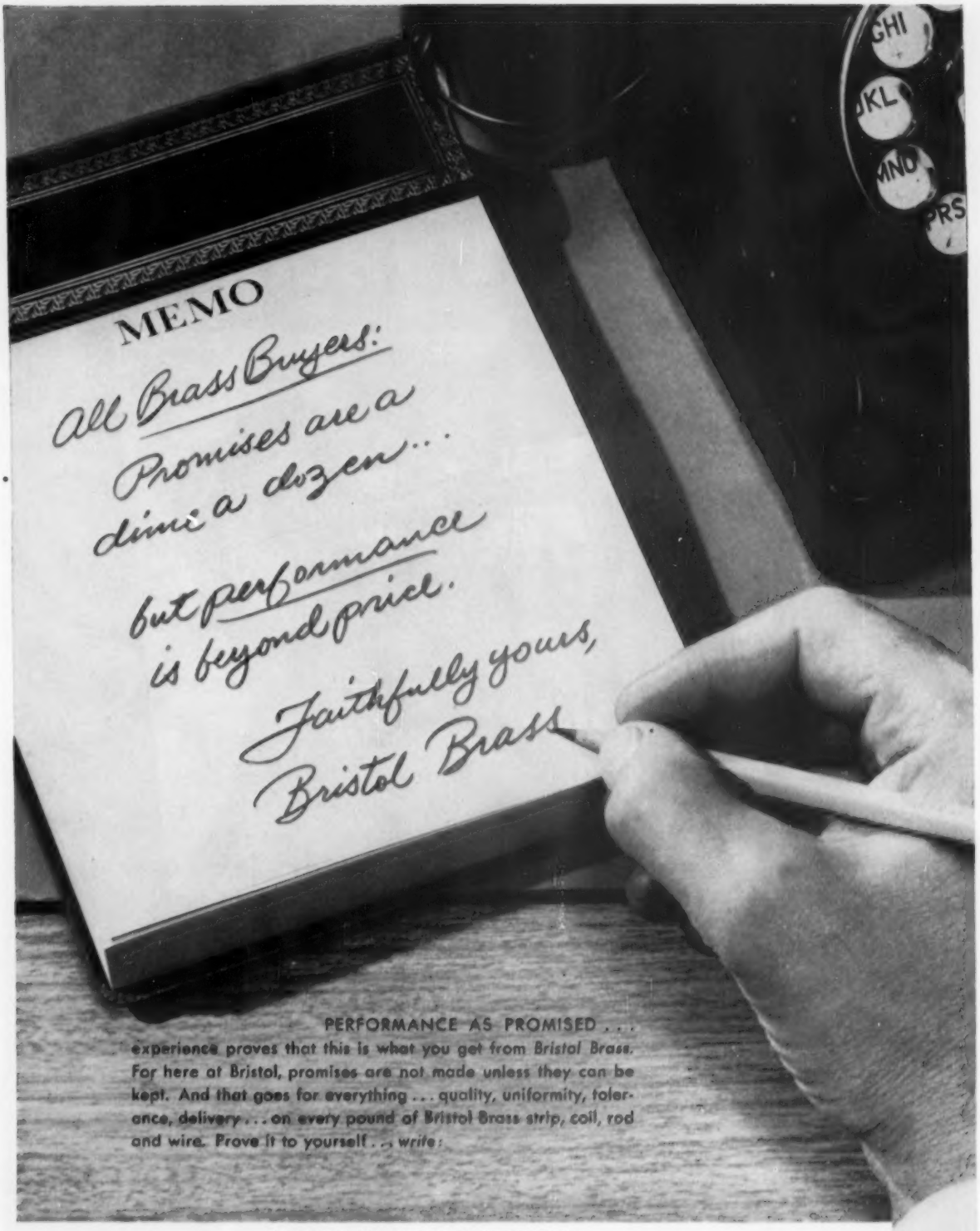
The deburring fixture consists of a spring-loaded Kennametal Grade K6 plate that bears against the burr-free side of the saw stock forcing it against three vertically-positioned and adjustable carbide scraper blades. As stock is fed through, these blades remove any burr resulting from the tooth milling operation.

This fixture was put into operation about 2½ years ago and is still in use today. Heretofore, a short piece of special file was used which required frequent downtime for cleaning and replacement. No accurate records have been kept on this operation but estimated saving per machine since



Wear spots protected . . .

Turn to Page 116



PERFORMANCE AS PROMISED . . .

experience proves that this is what you get from Bristol Brass. For here at Bristol, promises are not made unless they can be kept. And that goes for everything . . . quality, uniformity, tolerance, delivery . . . on every pound of Bristol Brass strip, coil, rod and wire. Prove it to yourself . . . write:

THE BRISTOL BRASS CORPORATION

has been making Brass strip, rod and wire here in Bristol, Connecticut since 1850, and has offices and warehouses in Albany, Boston, Buffalo, Chicago, Cleveland, Detroit, Milwaukee, New York, Philadelphia, Providence, Rochester, Syracuse. The Bristol Brass Corporation of California, 1217 East 6th St., Los Angeles 21. The Bristol Brass Corp. of Ohio, 1607 Broadway, Dayton.

"Bristol-Fashion" means **Brass at its Best**

THE TREND IS TO THOMAS

Multiple Punches

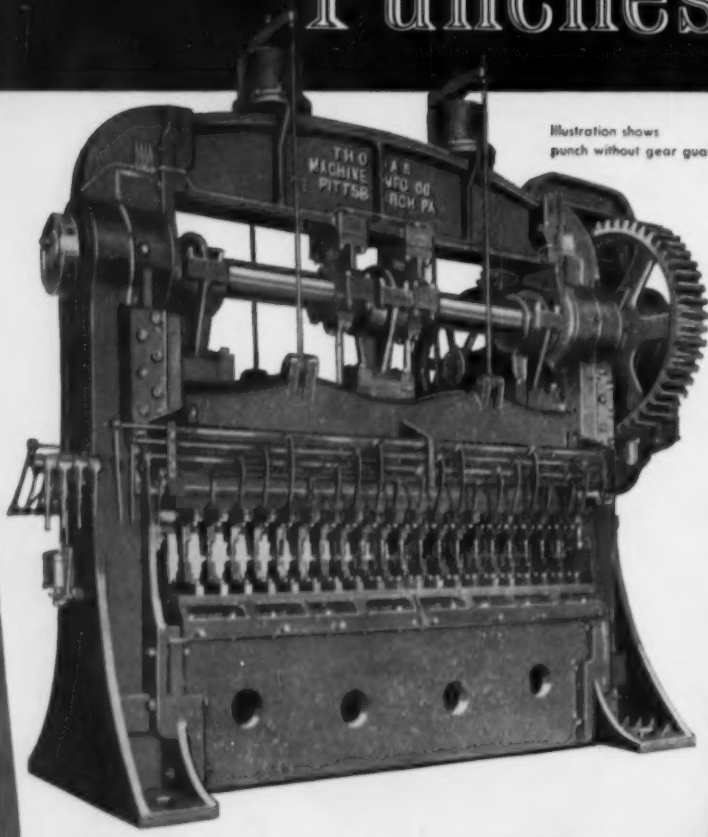


Illustration shows punch without gear guards

This 1000 ton capacity Multiple Punch was recently shipped by Thomas to one of the leading railroad car shops. It is being installed with a Thomas Automatic Spacing Table.

This combination will handle the complete punching of four center sill Z sections; two beams or channels; four angles or plates up to twelve feet wide. All automatically, without layout on the work.

Write for Bulletin 306

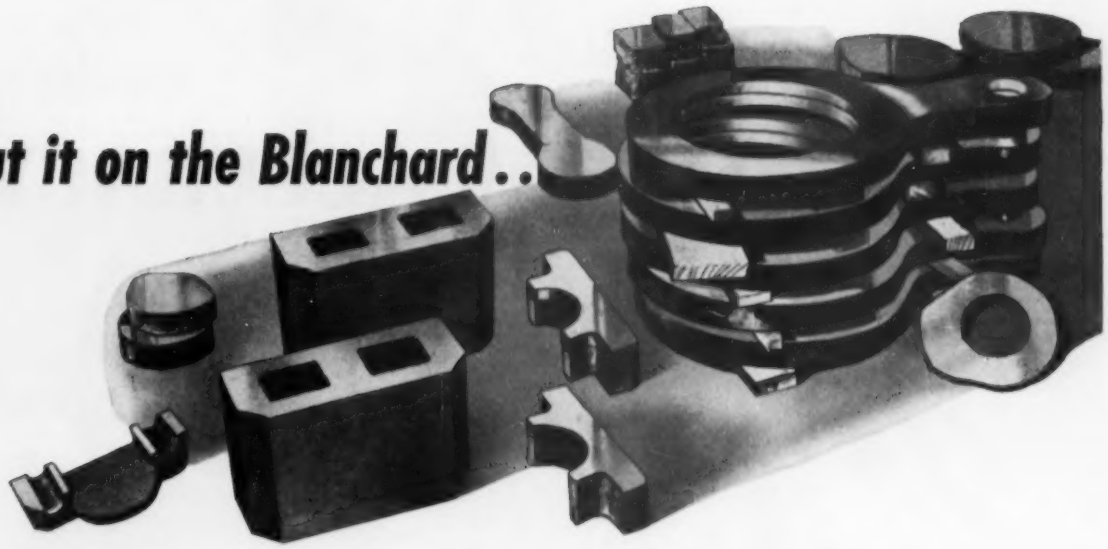
OTHER MULTIPLES

SHEARS · PRESSES · BENDERS

THOMAS
MACHINE MANUFACTURING CO.
PITTSBURGH 33, PA.

SPACING TABLES

Put it on the Blanchard..



it's versatile! Large and small shops alike find this Blanchard, with 72" diameter magnetic chuck, ideal for fast, precision grinding of miscellaneous work.

it holds multiple small pieces or plates, castings and die blocks up to 80" across corners, directly on the magnetic chuck. Irregularly-shaped workpieces are easily held with simple fixtures. (Custom-built grinders of this type can handle work 30" high.)

it's fast – with a hard wheel, soft steel can be "hogged off" at a rate of 10 cubic inches per minute.

it's precise – with a soft wheel, hardened steel ways are regularly ground flat and parallel to .001", with surface finish of 5 micro inches!

No wonder shopmen say this Blanchard No. 42-72 is "tops for versatility"!

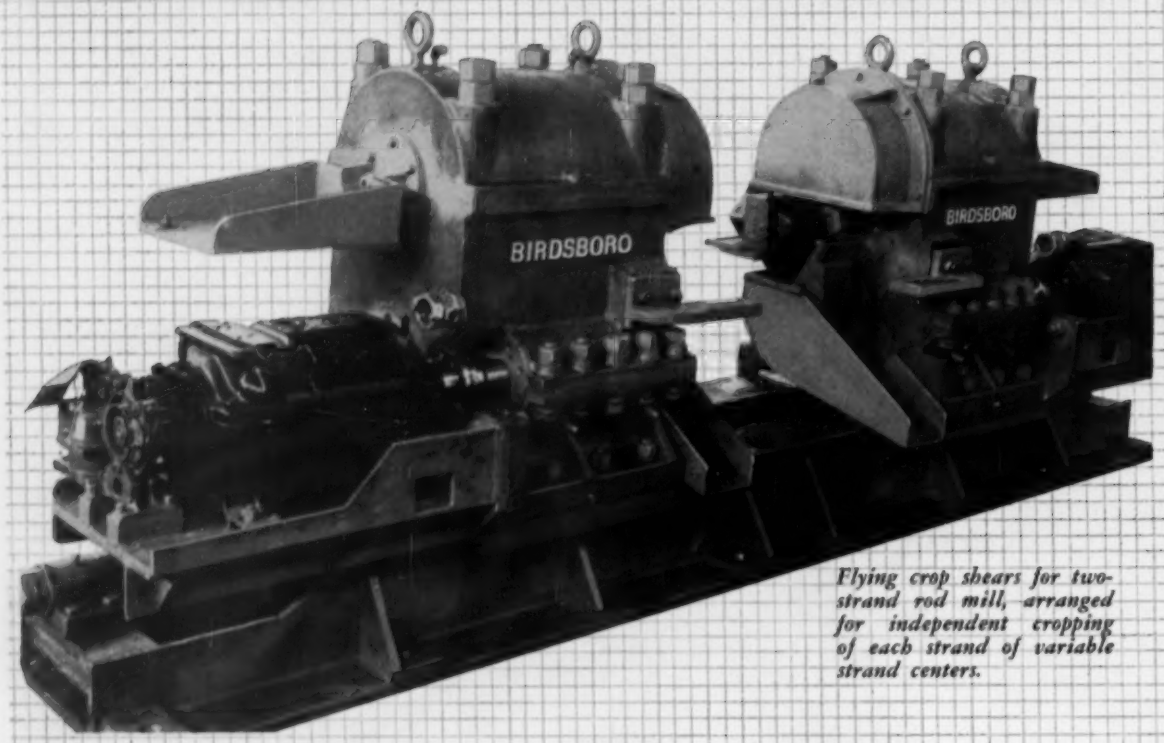
Send for free copies of "Work Done on the Blanchard" (fourth edition), and "The Art of Blanchard Surface Grinding".

PUT IT ON THE BLANCHARD

THE BLANCHARD MACHINE COMPANY

64 STATE ST., CAMBRIDGE 39, MASS., U.S.A.

DESIGNED FOR ACCURACY



Flying crop shears for two-strand rod mill, arranged for independent cropping of each strand of variable strand centers.

BUILT FOR SPEED

BIRDSBORO CROPPING SHEARS

Designers and Builders of:

STEEL MILL MACHINERY
HYDRAULIC PRESSES
CRUSHING MACHINERY
SPECIAL MACHINERY
STEEL CASTINGS
Weldments "CAST-WELD" Design
ROLLS: Steel, Alloy Iron, Alloy Steel

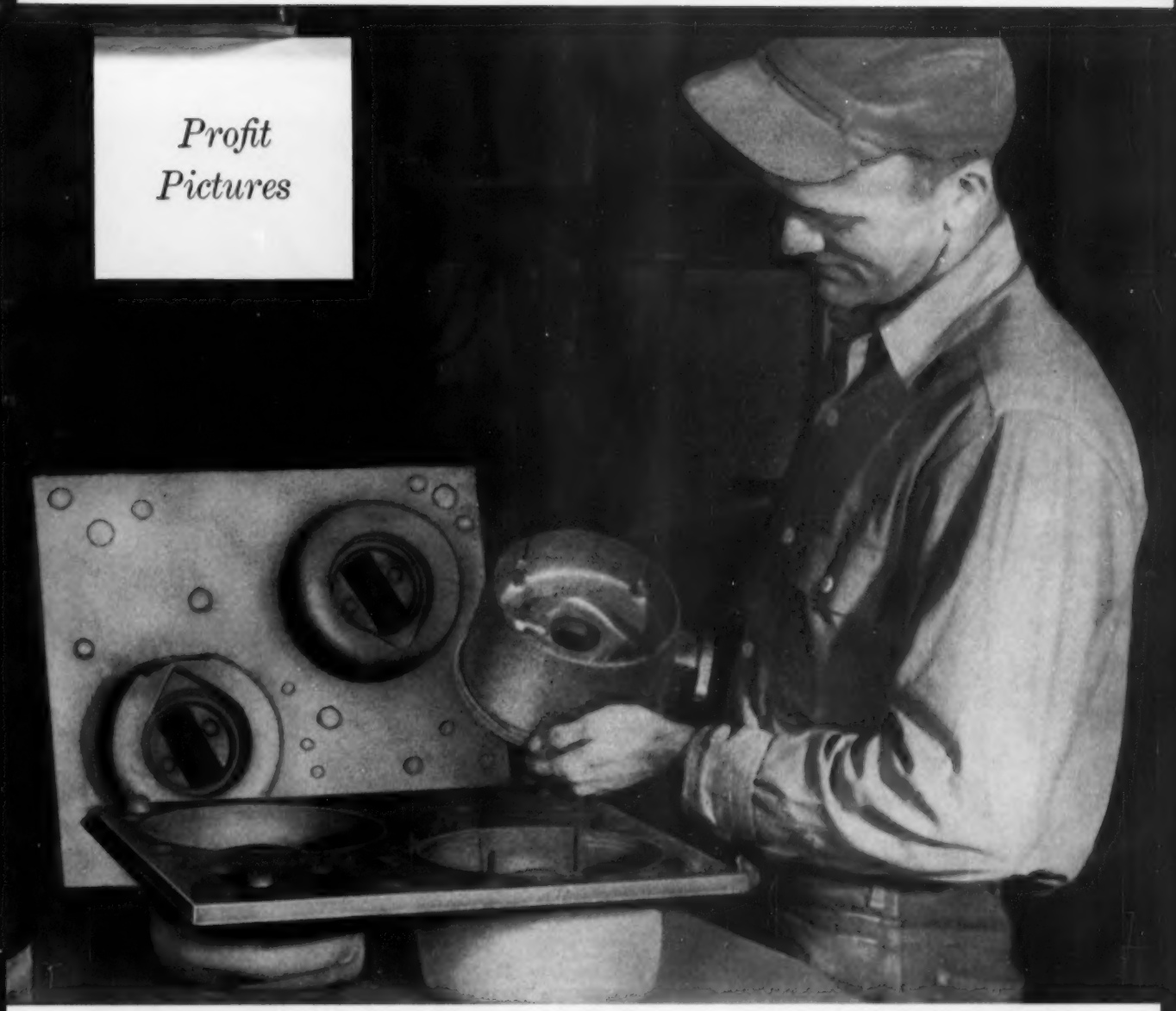
Whether it's a standard piece of equipment or still in the "idea stage" . . . BIRDSBORO engineers can design and build efficient steel mill auxiliary machinery to meet your specific needs. Your plant may be the next to benefit from the experience and ingenuity of BIRDSBORO engineers. Send us your requirements today.

MM-41-55

BIRDSBORO

BIRDSBORO STEEL FOUNDRY & MACHINE CO., BIRDSBORO, PENNA. Offices in Birdsboro, Pa. and Pittsburgh, Pa.

Profit Pictures



Foundryman inspects smooth finish of 8-lb. housing for Hotpoint Disposall® as part is taken from shell mold bonded with Resinox 736.

Leading gray iron foundry gets stronger molds using **Resinox 736!**

Shell molding pioneer selects Monsanto phenolic resin for its outstanding performance

"Much of the credit for our successful shell molding of garbage disposal housings must go to Resinox 736," according to Wayne Wright, shell molding engineer for Woodruff & Edwards, Elgin, Illinois.

"We have used other resins extensively in our plant and are now convinced that Resinox 736 provides a stronger mold. There is perfect uniformity in each batch we order."

The housings, made for the famous Hotpoint Disposall, were originally die cast and consisted of two separate parts. Now that the housing is shell molded, it consists of a single unit that is lighter in weight and less expensive to produce.

There is a further saving because far less cleaning and machine finishing are now necessary.

The Woodruff & Edwards project is only one of a long line of outstanding shell molding jobs in which Monsanto resins are being used.

For shell molding, core binding or sand conditioning resins that are research-developed and shop-tested to meet *your* foundry needs, write first to Monsanto Chemical Company, Plastics Division, Springfield 2, Mass.

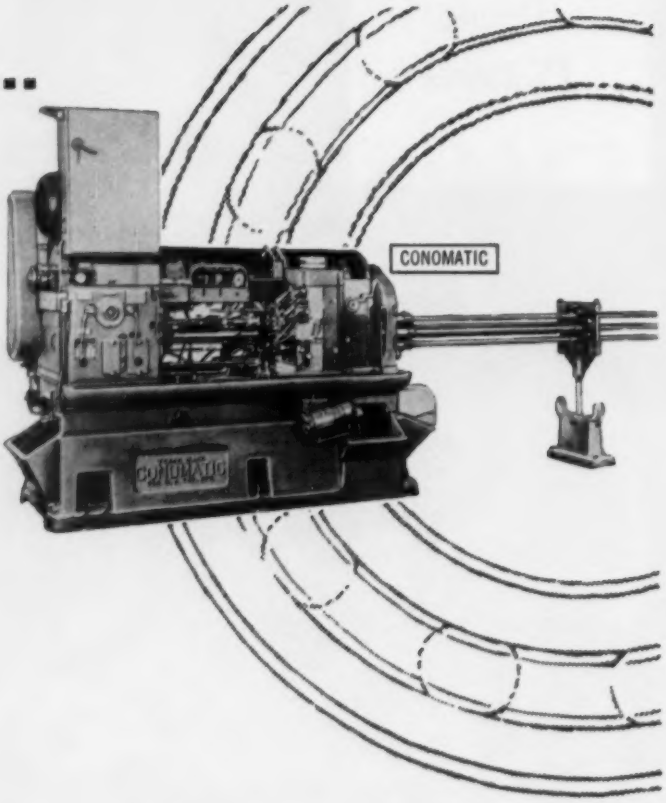
For stronger shell molds, specify RESINOX®

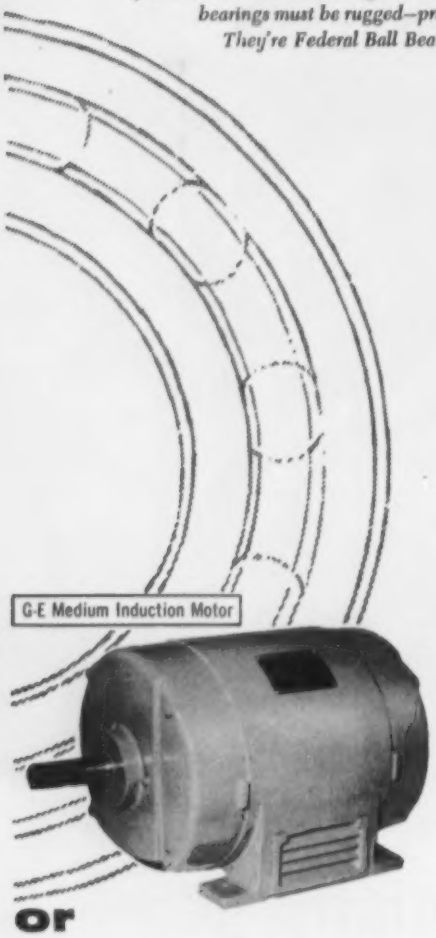
MONSANTO

*Disposall is a registered trade-mark of Hotpoint Co.

to feed a tool...

Automatic feed transmissions on newest type Conomatic Six Spindle Bar Machines have to deliver a powerful, steady tool drive under heavy loads for precision carbide machining. Feed shaft bearings must be rugged—precise. They're Federal Ball Bearings.





or quiet a motor...

The smooth hum of today's precision-built motors whispers the efficiency of every part. Here, too, Federal Ball Bearings quietly perform their continuous, anti-friction assignment—whatever the size—whatever the type.

so much of industry *turns* on FEDERAL ball bearings

Machine tools—motors—or moving vans! At plant, home, machine shop! On the highway, on the farm—where there's anti-friction work to be done, you'll find Federal Ball Bearings quietly and efficiently on the job. Hundreds of types—12,000 sizes—produced by this 50-year-old manufacturer of ball bearings...exclusively.
When Federal Ball Bearings are a part of so many things you *use*, shouldn't they be a part of the things you *make?*

Just off the presses! *175 pages of ball bearing and engineering data* —FEDERAL'S NEW CATALOG! *Just drop us a line and we'll speed you your copy.*

THE FEDERAL BEARINGS CO., INC. • POUGHKEEPSIE, N. Y.

Federal BALL BEARINGS

One of America's Largest Ball Bearing Manufacturers

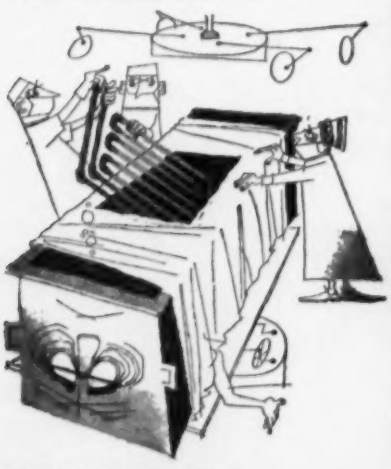
PLATECOILS®

speed cooling in subterranean quench oil tank

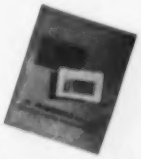
as **coil-itis** * *is cured at National Acme*

PLATECOILS *cure Coil-itis**

Platecoils overcome the limitations and operating difficulties of pipe coils by heating or cooling 50% faster, taking 50% less space and saving up to 50% on initial and maintenance costs.



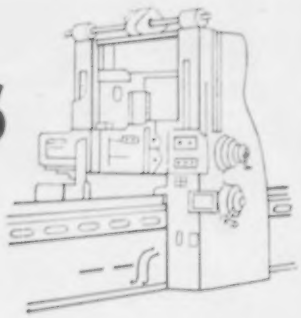
A bank of Tranter Platecoils is the key to speedier quenching of heat treated parts at National Acme Co., machine tool manufacturer at Cleveland, Ohio. The Platecoils, through which cold water is circulated, are in one section of a divided 2,000 gallon tank. Oil is pumped from this section into the bottom of the quenching half of the tank. At the top, oil spills over a baffle back into the cooling section, setting up a continuous flow of oil, cooled as it passes over the Platecoils. Quenching operations are not interrupted to wait for oil to be cooled as they were when a horizontal tube bundle was used. Maintenance and repair, previously a difficult and time-consuming job also has been simplified. Investigate the possibilities for Tranter Platecoil savings and efficiency in your plant, today!



For other examples and uses of Platecoil, write for Bulletin No. P75, a 12-company report.

PLATECOIL Div. TRANTER MANUFACTURING, Inc., Lansing 4, Michigan

LET SIMMONS REBUILD AND MODERNIZE YOUR PLANERS



Investigate the important production, maintenance and tax savings of SIMMONS ENGINEERED REBUILDING for your: Lathes, Planers, Surface Grinders, Cylindrical Grinders, Vertical Millers, Openside Planers, Automatics, Vertical Boring Mills, Turret Lathes and Radial Drills.

A qualified Simmons rebuilding engineer will discuss it with you. Write, wire or phone today. Simmons Machine Tool Corporation, **1721** North Broadway, Albany 1, N. Y.

Write for Simmons Way... case histories of rebuilding jobs.

SIMMONS GIVES MACHINE TOOLS A NEW LEASE ON LIFE

Unconditional guarantee... our standard since 1910

Setting machinery?

use **non-shrink EMBECO GROUT**

NOW READY-TO-USE

send for booklet

Whether it's a rolling mill, hydraulic press, planer, lathe, shaper or other type of steel mill or metal working equipment, Embeco Pre-Mixed Grout will give you *lasting* results.

Embeco Pre-Mixed Grout produces a *flowable* grout that is *non-shrink*... insures full bedplate contact... maintains alignment... has high impact-resistance.

Recommended by leading equipment manufacturers everywhere. EMBECO PRE-MIXED GROUT IS READY TO USE—you add only water. Write for 8 page illustrated booklet.

Creators and Manufacturers of Products to Improve Concrete and Mortar

THE MASTER BUILDERS CO.

CLEVELAND 3, OHIO — Subsidiary of American Marietta Company — TORONTO 15, ONTARIO

Length of stroke and angle on knocker dies determine the degree of tooth set . . .

installation of the carbide components is approximately $100.00 per year.

Braze to Steel

Guide jaws are long strips of Grade K6 carbide brazed to adjustable steel bodies, one on each side of the saw stock. Their function is to keep the stock in a fixed upright position for the teeth setting knockers. The initial set of jaws was in use for a little over three years before requiring regrinding.

Use Solid Carbides

The feed ratchet, which is solid Grade K1 carbide, is synchronized with the knocker dies. It indexes on each stroke of the knockers to feed the stock into position for setting the teeth. Pitch of the ratchet teeth corresponds with pitch of the saw being set. The original carbide ratchet is still in operation and considering the amount of wear to date, should run another several million feet before being replaced.

Can Be Reground

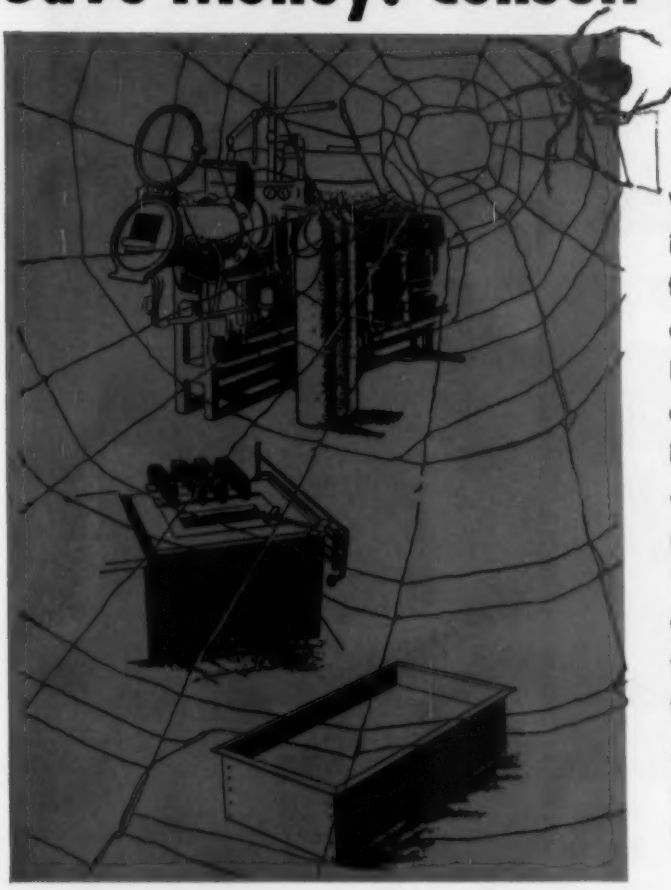
The knockers slide in-and-out from both sides, upsetting the saw teeth on each stroke. Length of stroke and angle on the knockers determine the degree of tooth set. These dies are made of solid Grade K6 carbide. Both ends can be used before regrinding is necessary.

The foregoing applications are typical of results obtained when carbide is used as wear-resistant parts. They may suggest possibilities for applying carbides to other wear-spot problems to help reduce costs and improve products.

Carbide parts . . .

Only HALF BUSY?

Save Money! Consult your Commercial Heat Treater!



When reduced production schedules result in part time operation of your heat treating facilities, overhead burden rapidly rises to a point of no return. Chances are there is a local commercial organization which, because of the nature of his service business, is geared to handle your reduced volume and eliminate your heat treating department's red ink.

With furnaces and other equipment usually operating on a 24-hour day-by-day basis, the commercial heat treater, skilled in all types of metal treating operations, can serve you promptly and efficiently, with cost savings that will mean more profit and a better competitive position in your market.

THERE'S A HEAT TREATING SPECIALIST NEAR YOUR PLANT

Ace Heat Treating Company
Elizabeth, New Jersey

Anderson Steel Treating Co.
Detroit, Michigan

Benedict-Miller, Inc.
Lyndhurst, New Jersey

Bennett Heat Treating Co., Inc.
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Cook Heat Treating Co. of Texas
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Dayton 3, Ohio

Drever Company
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MTI — METAL TREATING INSTITUTE

Hollywood Heat Treating Co.
Los Angeles 38, California

Alfred Heller Heat Treating Co.
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L-R Heat Treating Company
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The Lakeside Steel Improvement Co.
Cleveland 14, Ohio

Metallurgical, Inc.
Minneapolis 7, Minnesota

Metallurgical, Inc.
Kansas City 8, Missouri

Metlab Company
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Metro Heat Treating Corp.
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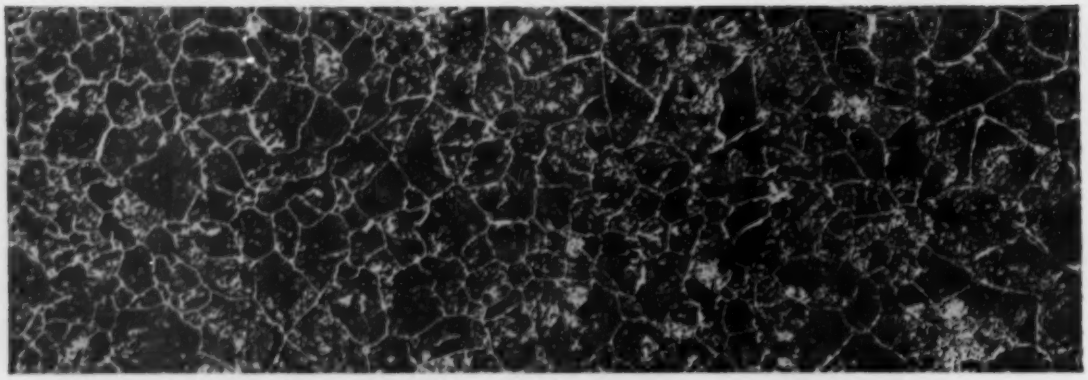
INDIVIDUAL HANDLING... one good reason

TIMKEN® forging steels give uniform



grain size order after order

THERE are good reasons for the uniform grain size in every piece of Timken® forging steel, as shown in the photomicrograph above. And good reasons, too, why you get the grain size you want order after order.

Your order for Timken forging steels is handled individually in our mills and we target conditioning procedure to your particular forging requirements. In the top photo, a billet is stamped to identify the heat and ingot it came from—one way we can make sure you get uniform grain size from shipment to shipment.

Uniform grain size after heat treatment is assured by spectrometric or microscopic examination of every heat. The result—you can be sure that forgings made from Timken forging steels have uniformly high ductility and resistance to impact.

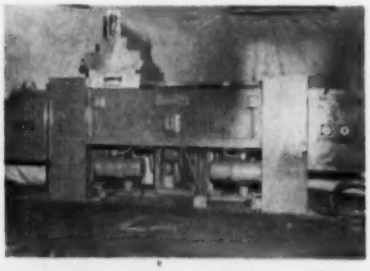
You have fewer furnace temperature adjustments when you use Timken forging steels. Every lot responds uniformly to heat treatment because every lot has the same physical and chemical properties. Always specify Timken forging steels. The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

YEARS AHEAD—THROUGH EXPERIENCE AND RESEARCH

SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS TUBING

NEW EQUIPMENT

New and improved production ideas, equipment, services and methods described here offer production economies... for more data use the free postcard on page 97 or 98



Shell-molding machines make 50-100 molds per hour

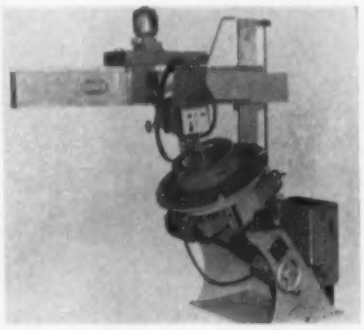
Six standard models of this shell molding machine are being produced, with manual and automatic operation. New feature is the quick-change pattern frame, with individual gas burner, which travels with the pattern. Designed and constructed so as not to interfere with the ejector pins, regardless of their position or location. Patterns can be changed in less than 5 min. Curing of shell is done by hot air. Curing oven is also gas heated, forcing hot air downward on the shell giving complete uniform heat penetration. *Tyler Metal Products Co.*

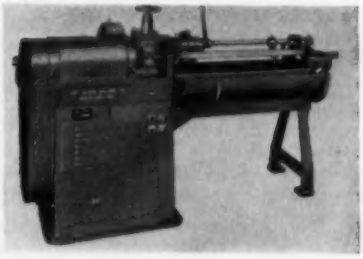
For more data circle No. 37 on postcard, p. 97.

Combination work and welding head positioner

A new combination Mast-Ram-Positioner is recommended for metal fabricating shops or experimental laboratories using automatic welding. Precision and ruggedness are emphasized throughout. The work may be positioned or rotated under the welding head which is adjustable vertically and horizontally. Motorized, variable speed, lateral travel on the ram is available with the automatic head mounted on a travel carriage. Another feature is 360° rotation of the mast and ram. The automatic head can be swung around to work on another positioner, turning rolls, bench or floor job. Capacity of the positioner shown is 500 lb; others are available. Carriage travel on ram is 3 ft. *C. B. Herrick Mfg. Corp.*

For more data circle No. 38 on postcard, p. 97.





Wire machine assures high production at low cost

Fast, accurate and economical wire straightening and cutting is made possible by features of the Lewis 2-C wire machine. Exceptionally rigid straightener arbor support brackets minimize vibration. Enclosed straightener arbor guard keeps oil off machine and V belts. Higher speed 5-die straightener arbor is mounted on ball bearings. A solenoid-operated trip mechanism is available for small diameter wire sizes. Two models are for wire from 1/16 to 3/16 in. and 3/32 to ¼ in. *Lewis Machine Co.*

For more data circle No. 39 on postcard, p. 97.

Provides precise heat control for electronics

An electric conveyor furnace interests the electronics industry through its ability to provide precise, uniform heat control, controling temperatures within ± 3°. It also improves production capacity. It is used to fire tiny Metalohm resistors at Litton Industries. The furnace handles three separate firings, ranging from 800° to 1500° F with uniform accuracy. Required rapid heating and cooling is accomplished through use of light gage elements supported in special refractories. A lightweight, fabricated hearth plate transmits heat swiftly and evenly. The conveyor furnace, carrying the resistors at speeds ranging from 6 ipm to 4 fpm, upped productive capacity about 1000 pct it is reported. *Pacific Scientific Co.*

For more data circle No. 40 on postcard, p. 97.

Turn Page

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Your Carpenter Representative is the lead-off man for a team of specialists devoted to helping you get full value from tool, alloy or stainless steels. His friendly, willing assistance to work with you at any time is backed by these many advantages that can mean less worry . . . greater economy . . . improved results for you on job after job.

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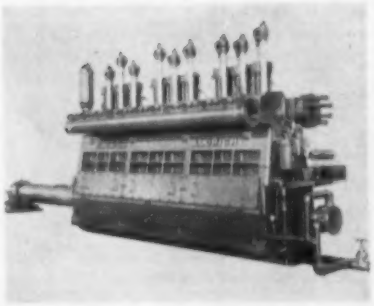
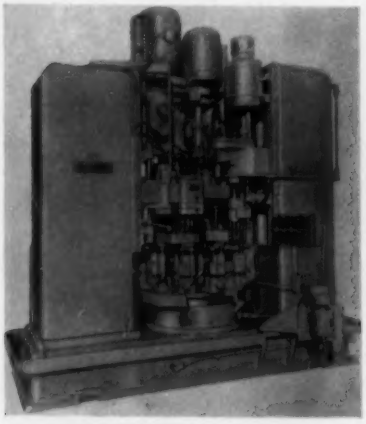
SPECIALTY TOOL • ALLOY and STAINLESS STEELS

Direct flow pumps for heavy duty applications



The advantages of positive displacement, high speed operation, compact construction, interchangeability of parts, low maintenance, and minimum discharge variation are offered in a new line of 6-in. stroke Nonuplex direct flow pumps. Rated at 900 bhp, these 9-plunger reciprocating pumps operate at speeds up to 300 rpm and have pumping capacities up to 1520 gpm. They are available with six different interchangeable fluid ends and 20 different plunger diameters. Changes in speed and plunger sizes permit various pumping capacities. Pumps are driven by engine or synchronous engine-type motor. *Aldrich Pump Co.*

For more data circle No. 41 on postcard, p. 97.



Twelve-station machine rated at 93 pieces per hour

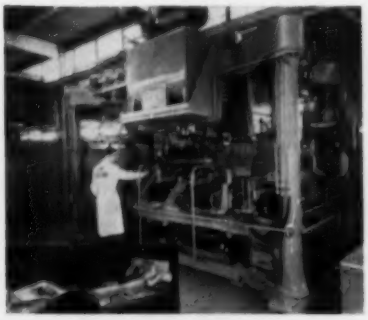
This vertical indexing machine has 34 spindles and operates at 31 sec cycle time to produce 93 pieces per hr at 80 pct efficiency. Automatic units used include two No. 5 units mounted vertically, a No. 2 unit mounted horizontally on a rapid travel slide, and an automatic lead screw tapper with reversing motor driving a 6-spindle tapping head. Bed and columns are of welded steel construction. Chip cutting efficiency is made possible by design of the plate type cam, plus the action of the pneumatic counterbalance. Drilling, reaming and countersinking operations are performed by a 22-spindle, high speed, pressure lubricated head mounted to the first unit. Boring operations are performed by a 5-spindle head of the second unit. The 12 holding fixtures are mounted on an independently powered automatic index table. All machine elements are electrically synchronized. *W. K. Milholland Machinery Co., Inc.*

For more data circle No. 42 on postcard, p. 97.

High spindle speed ratio is feature of light duty drill

Said to be completely new from top of column to leveling screws, the 3 hp light duty radial drilling machine offers three spindle speed ranges: 40-1600, 50-2000, and 80-3200. Twelve geared spindle speed changes are provided in the head by means of sliding heat treated and hardened alloy steel gears mounted on ground integral multiple splined shafts. The machine is equipped with an automatic reverse to spindle. Spindle and spindle sleeve are counterbalanced by an adjustable spring mechanism. Head is mounted on the arm on two dove-tail slides which require no adjustable gibs because the weight of the head is carried on adjustable ball bearing rollers which operate on a hardened and ground way. Standard feed mechanism has four feeds: 0.003, 0.007, 0.011, 0.015 ipr. As a safety feature, it is impossible to raise or lower the arm while it is clamped; centralizing the lever clamps arm to column. *Cincinnati Gilbert Machine Tool Co.*

For more data circle No. 43 on postcard, p. 97.



Welding press fabricates auto floor panels

This resistance welding machine lends itself to a variety of complete tooling changes to meet specific metal fabricating requirements. The four post mechanical welding press will accept any welding fixture necessary to perform the fabrication. It is also engineered for quick, simple removal of the multiple point welding fixture. The first series of the welding machines fabricates complete floor panel assemblies for automobiles. Operator turns a switch, causing the welding fixture to adjust itself and fabricate the selected floor panel assembly automatically. The fixture is automatically indexed and each gun welds two spots on each workpiece. *Link Welder Corp.*

For more data circle No. 44 on postcard, p. 97.

Turn Page

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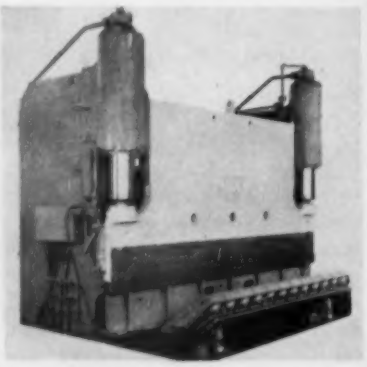
NEW EQUIPMENT

Hydraulic stretch press

New stretch-press with overall length of 16 ft and stretch jaws 12 ft long is presently being used to form leading edges of wings for aircraft. It is well-adapted to similar stretch-forming jobs. Stretch-forming is accomplished by using



a male die and stretching the material around it. A single plastic or kirksite die can be used to form complex shapes. Simple piston-grip control operates all press and stretch-forming equipment. By removing the stretch-forming equipment the press can be converted into a versatile press brake with a maximum tonnage of 500 tons, a stroke of 63 in. and an open height of 48 in. *Pacific Industrial Mfg. Co.*

For more data circle No. 45 on postcard, p. 97.

Roof sump receiver

Engineered especially for flat roofs, a new sump receiver eliminates the need for chamfering and reduces roof strain by distributing

the weight of the drain installation over a larger segment of the roof area, and assures installation of the drain flush with the plane of the roof. Made of steel with a corrosion-resistant finish, the sump receiver fits all Zurn roof drains. *J. A. Zurn Mfg. Co.*

For more data circle No. 46 on postcard, p. 97.

QUANTITY PRODUCTION OF GREY IRON CASTINGS

ONE OF THE NATION'S LARGEST AND MOST MODERN PRODUCTION FOUNDRIES

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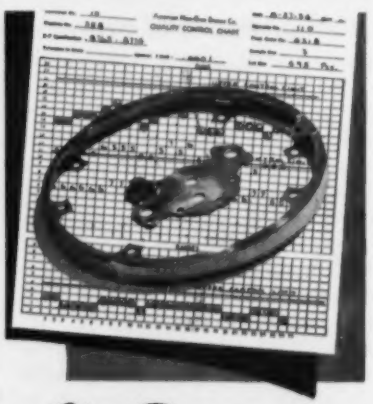

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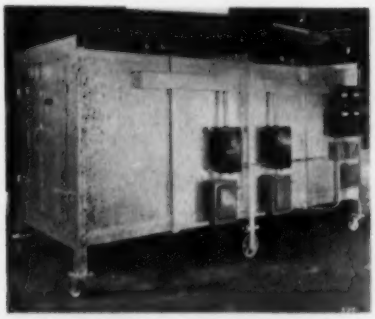
Preheats aluminum sheets

Mobile electric oven used by a manufacturer of aluminum products is mounted on sturdy swivel wheels for easy movement and is designed for preheating aluminum sheets. It is capable of producing temperatures up to 750° F. The oven has a roller hearth and gen-



erous working space, 4 ft wide, 4 ft high and 12½ ft long. Simple controls regulate temperature safely and precisely. With all controls in place, the 90-kw oven is delivered ready for connection to 440 v, 3-phase current. *Waltz Furnace Co.*

For more data circle No. 47 on postcard, p. 97.

Pipe line on wheels

This portable storage-transfer tank is serving many industries as an efficient, economical substitute for expensive pipe-valve-pump systems. It is particularly adaptable where there are varying and intermittent requirements for heavy acids or industrial chemicals in different plant areas. As transfer tanks

they eliminate dangerous and cumbersome carboy handling. Available with a variety of sheet linings or coatings for complete protection against corrosive elements, the tanks have capacities from 200 gal upward on either skids or casters. *Heil Process Equipment Corp.*

For more data circle No. 48 on postcard, p. 97.

Turn Page

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Manufactured Only By Towmotor Corporation • The Pioneer Maker Of Fork Lift Trucks

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Metallic putty

Aluminum putty which shrinks less than 0.2 pct while hardening and will not crack in thick applications, is available for building up metal surfaces or for caulking seams and holes in metal and wood surfaces. Though easy to mix with its curing agent, the putty has the needed thixotropy for application with simple hand tools to vertical and overhead surfaces. Metalset A201 hardens to a metallic density at room temperature. *Smooth-On Mfg. Co.*

For more data circle No. 49 on postcard, p. 97.

Electric hoist truck

Greater economy in delivery and material handling is possible with the model 1000 electric Hoist-O-Matic truck crane. Pushbutton control lets one man do the work of two or more. Operated anywhere within a radius of 8 ft from the crane, loads up to 1000 lb can be

handled, stopping it at any height instantaneously with its automatic braking. The 4-ft boom swings 360°, and revolves on hardened steel rollers and a thrust bearing plate. The crane is 6 ft high. It is a one package design with complete power unit mounted in the base. Requires only 18 x 23 in. mounting surface and can be mounted anywhere on truck bed. *Hoisters, Inc.*

For more data circle No. 50 on postcard, p. 97.

Convenient new container

Waterless skin cleanser for on-the-job use is now packaged in a new 16-oz metal container. SBS-30, containing lanolin, is a superrefined, cosmetic grade waterless cleanser that removes industrial grimes, greases, paints, oils and other irritating soils. *Sugar Beet Products Co.*

For more data circle No. 51 on postcard, p. 97.

Drilling-tapping machine

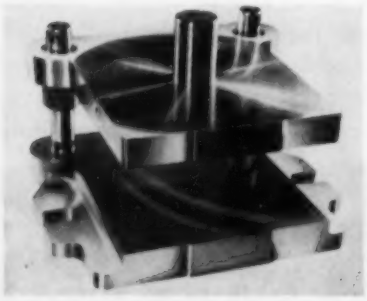
This single purpose drilling and tapping machine turns out 450 carburetor bodies per hr at 100 pct efficiency. Designed and built for an automobile manufacturer, it is an 8-station, multiple spindle, dual loading transfer type machine with

5 drill units, 2 tapping units and an air hydraulic transfer mechanism. On it various drilling and tapping operations are performed, the parts being located and clamped at each station in previously machined valve holes. Parts ride free on rails between stations. *Hartford Special Machinery Co.*

For more data circle No. 52 on postcard, p. 97.

Die set line

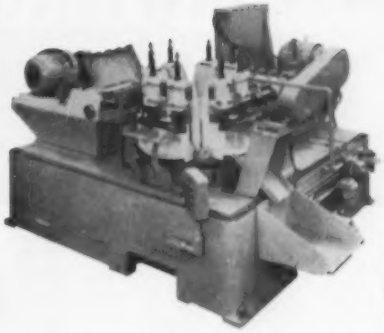
Outstanding features of a new die set line include an oil lubrication system and grinding of top and bottom outer surfaces. These standard die sets are produced in accordance with recently estab-



lished ASA standards. It is said countless different sizes and shapes of standard die sets can be assembled from local stocks of standard components. *Danly Machine Specialties, Inc.*

For more data circle No. 53 on postcard, p. 97.

Precision Pumps for Precision Machinery



Hartford Special Drilling Machine Equipped With a Ruthman Gusher Coolant Pump.

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Coolant Pumps

Gusher Coolant Pumps are precision built of the finest materials. The rotating shaft is electronically balanced to cut vibration wear to an absolute minimum. The motor is totally inclosed and drip-proof. The heavy-duty ball-bearings are pre-lubricated. You can specify Gusher Coolant Pumps for your precision machinery with the sure knowledge that they will give you efficient service at low maintenance cost.

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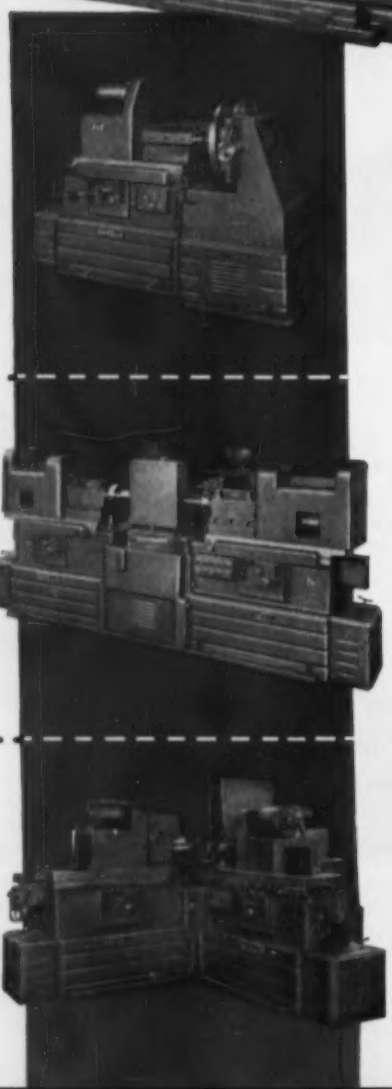
Units may be re-arranged around fixture or new fixture sections designed for different operations.



STYLE 54 ONE-WAY: A standard way unit combined with a fixture unit to suit the work. Large, heavy, and awkward parts, loaded in the fixture, remain stationary; the spindles advance to the work.

STYLE 54 THREE-WAY: Standard way units are electrically interlocked to operate simultaneously, or in any sequence. Fast and efficient for machining parts from three directions and holding accurate locations.

STYLE 58 FOUR-WAY: Controlled from a central push-button station. Particularly suitable for machining parts from four directions simultaneously, and performing progressive operations.

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Way Machines perform such operations as precision boring, turning and facing. They consist of one or more standard way units combined with a fixture section. Each way unit has its own hydraulic system and controls to operate the spindle slide. Tooling and fixture are added to suit the individual operation. Get details from your Ex-Cell-O representative or write for Way Machine Catalog.

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XLO
EX-CELL-O for PRECISION

The Iron Age SUMMARY. . .

Steel market is approaching a seasonal peak . . . High point will be 96-97 pct of capacity . . . Summer leveling will be followed by upturn.

Demand Approaching Peak . . .Steel demand is approaching its seasonal peak. Indications are that the market buildup, spurred by pressure from virtually all industry, will hit its high point in April. Ingot rate will reach 96, perhaps 97 pct of capacity, before leveling off.

Basis for this short-term outlook is the terrific demand from automotive companies in the critical production period just ahead. The car makers underestimated strength of the new car market and are trying to make up for lost time.

Meanwhile, automotive pressure has created tense feeling among steel consumers. Everyone is clamoring to get his requirements on the books and from the mills as fast as producers can handle them. This will pitch steel production to near-record levels before the downturn comes.

Post-summer Upturn . . . A summer leveling off can be expected. But on a seasonally-adjusted basis it probably will indicate an improvement and continuation of the recovery movement.

There will be another upturn following the summer breathing spell. Strength of the market rests on such a broad base that another surge is just about certain in last half of the year.

Along with automotive, construction, oil and gas, and containers, the farm market is moving up strongly. Despite lower commodity prices and reduced purchasing power, the farmer is buying because he needs steel and steel products. He was virtually out of the market last year.

In some products there definitely will be carryovers from second into third quarter. Some mills already are talking about extensions of up to three weeks over scheduled delivery after April 15.

Labor Influence . . . Steel and automotive labor are having an influence on the market. Outcome of auto labor negotiations is uncertain at the moment. But in steel the odds favor peaceful settlement of forthcoming talks between the industry and the United Steel Workers.

Chances are negotiations in steel will wind up with a moderate wage increase followed by a compensating price boost.

The steel ingot rate this week is scheduled at 94.5 pct of capacity, up one-half point from last week's revised rate.

There is strong evidence that mills are fighting the upward trend in scrap prices. They are staying out of the market or refusing to pay higher prices. This is particularly noticeable in the East where prices actually dropped.

Steel Output, Operating Rates

Production (Net tons, 000 omitted)	This Week†	Last Week	Month Ago	Year Ago
	2,279	2,268	2,218	1,648
Ingot Index (1947—49=100)	142.0	141.0	138.1	102.6
Operating Rates				
Chicago	97.0	99.0	93.5	75.5
Pittsburgh	94.0	95.0	91.0	77.0
Philadelphia	94.5	94.5*	84.0	59.5
Valley	94.0	94.0*	90.0	63.0
West	97.0	95.0	94.0	71.5
Detroit	91.0	90.0	89.0	83.0
Buffalo	100.0	100.0	100.0	67.0
Cleveland	101.5	97.5*	96.0	57.0
Birmingham	87.5	87.5	86.5	75.5
S. Ohio River	89.0	87.0*	72.0	70.0
Wheeling	92.0	95.0*	100.0	76.0
St. Louis	95.0	95.0	96.0	62.5
Northeast	80.0	80.0	87.0	49.0
Aggregate	94.5	94.0*	91.5	69.0

*Revised. †Tentative

Prices At A Glance

(cents per lb unless otherwise noted)

	This Week	Week Ago	Month Ago	Year Ago
Composite prices				
Finished Steel, base	4.797	4.797	4.797	4.634
Pig Iron (Gross ton)	$56.59	$56.59	$56.59	$56.59
Scrap, No. 1 hvy (gross ton)	$37.00	$37.50	$36.35	$24.33
Nonferrous				
Aluminum, ingot	23.20	23.20	23.20	21.50
Copper, electrolytic	33.00	33.00	33.00	29.875
Lead, St. Louis	14.80	14.80	14.80	13.50
Magnesium, ingot	27.75	27.75	27.75	27.75
Nickel, electrolytic	67.67	67.67	67.67	63.08
Tin, Straits, N. Y.	91.125	90.875	90.125	95.50
Zinc, E. St. Louis	11.50	11.50	11.50	10.25

Nickel Supply Will Be Eased

Govt. to release 3 million lbs destined for stockpile . . . Will ease pinch on alloy and stainless steel producers . . . Plates becoming tight.

◆ GOVERNMENT decision to release 3 million lbs of nickel originally earmarked for the stockpile will ease the pinch on producers of alloy and stainless steels.

Demand for these steel products has been growing along with the general surge in the market. Reports from IRON AGE district editors indicate that stainless and alloy mills have been operating hand-to-mouth on nickel. One producer says he does not know from week-to-week how much he will receive.

Behind the pinch is the strong demand for nickel-bearing steels. Alloy bars have become progressively tighter. Stainless sheet mills are operating at capacity for weeks. More recently, wire and stainless bars have moved up strongly.

As forecast by THE IRON AGE (Feb. 3, 1955, p. 176), plates have become one of the tightest items on the product list. Some producers are taking "tentative" orders for third quarter. It looks like there will be a carryover from second to third quarter. Pipe lines appear to be the biggest influence on the market, although railroad ordering has been stepped up recently. In some districts it's tough to get plates even though pipe lines have not yet hit their stride in that particular area.

Any further improvement in railroad, plus an expected pickup in shipbuilding (THE IRON AGE, Mar. 17, 1955, p. 59) will compound the difficulty of plate procurement.

Emergency ordering from warehouses is becoming more widespread. A team of automotive expediters is making the rounds of distributors on the chance of picking up urgently-needed cold-rolled sheets, mainly seconds.

SHEETS AND STRIP . . . Third quarter ordering of cold-rolled sheets is becoming commonplace. And more orders are being pushed back on delivery schedules, indicating probability of a strong carryover from second quarter. Some mills have advised customers by phone and letter that they must have up to three weeks' leeway on cold-rolled sheet delivery dating from original delivery date. Hot-rolled sheet backlog has stretched to 10-12 weeks in the **East**. Sheets and strip are being allocated by some producers. Republic Steel Corp. announced plans for new hot and cold-rolled sheet and galvanizing line at Gadsden, Ala. Mill will roll 48 in. sheet and galvanized. Great Lakes Steel Div. of National Steel will increase c-r sheet capacity a minimum of 50,000 tons per month under a program to be completed by end of 1955.

The U. S. Export Co. announces that the price of hot-rolled sheets 18 gauge and heavier will rise from $4.23 to $4.42 per 100 lbs.

BARS . . . Consumers are making inquiry for third quarter delivery. A producer in **Chicago** district has discontinued mailing his rolling schedule to customers because of solid bookings; 8 weeks being quoted on hot-rolled bars, but consumers are counting on June delivery at earliest. In the **East**, cold-finished, alloy, and hot-rolled carbon bars are backlogged 4 to 8 weeks. **Detroit** reports the bar market looks strong through June; car production schedules for June have been increased.

STAINLESS . . . Stainless strip deliveries are extended for 8 weeks in **Cleveland** market. **Detroit** sources look for continued good business since there is no indication of inventory building. Flat-rolled continues at capacity in **Pittsburgh**.

PLATES . . . Producers are talking about carryover tonnages from second to third quarter. An **Eastern** mill is accepting "inquiry only" on third quarter bookings; railroad ordering for car building and track maintenance becoming an important factor.

STRUCTURALS . . . Market continues to gain strength. Wide-flange beams and light structurals are setting the pace, but standards are picking up under influence of approaching construction demand. In the **Midwest**, light standards and wide-flange are being booked for June delivery. In the **East**, shapes are booked through April for a major producer, who is accepting May bookings provided production matches expected demand.

PIPE AND TUBING . . . Oil country demand continues strong. Line pipe gaining more strength as pipe line projects get under way; market still has not felt anticipated surge from oil and gas line demand, but nevertheless it's growing tighter. Under impetus of construction, merchant pipe backlog is becoming more extended.

WIRE . . . Merchant and construction wire orders extended into third quarter. Products requiring special heat treating and annealing are on 10-week delivery basis in **Cleveland** area. Poor weather conditions are handicapping deliveries of merchant wire in **Midwest**. Highway and construction coupled with surge from the farm are behind the strong market.

WAREHOUSE . . . Pressure is building up. Reports from IRON AGE districts indicate that March business will be approximately 25 pct better than February. In **Pittsburgh**, the distributors report good demand for structurals and plates.

Purchasing Agent's Checklist

COPPER: Tight supply has mills asking for export controls, stockpile relief ..... p. 35

AUTOMOTIVE: Tops steel consumer parade with 20.5 pct of shipments last year ..... p. 38

FARM EQUIPMENT: Sales showing 20 pct rise in business over year ago ..... p. 39

PLANTS: Northwest is proving a bonanza for growing metalworking industry ..... p. 61

TOOLS: Machine tool orders on the rise, backlogs up ..... p. 63

Comparison of Prices

(Effective Mar. 29, 1955)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

	Mar. 29 1955	Mar. 22 1955	Mar. 1 1955	Mar. 30 1954
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	4.05¢	4.05¢	4.05¢	3.925¢
Cold-rolled sheets	4.95	4.95	4.95	4.775
Galvanized sheets (10 ga.)	5.45	5.45	5.45	5.275
Hot-rolled strip	4.05	4.05	4.05	3.925
Cold-rolled strip	5.79	5.79	5.79	5.513
Plate	4.225	4.225	4.225	4.10
Plates wrought iron	9.30	9.30	9.30	9.30
Stainl's C-R strip (No. 302)	41.50	41.50	41.50	41.50
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	$9.05	$9.05	$9.05	$8.95
Tinplate, electro (0.50 lb.)	7.75	7.75	7.75	7.65
Special coated mfg. ternes	7.85	7.85	7.85	7.75
Bars and Shapes: (per pound)				
Merchant bars	4.30¢	4.30¢	4.30¢	4.16¢
Cold-finished bars	5.40	5.40	5.40	5.20
Alloy bars	5.075	5.075	5.075	4.875
Structural shapes	4.25	4.25	4.25	4.10
Stainless bars (No. 302)	35.50	35.50	35.50	35.50
Wrought iron bars	10.40	10.40	10.40	10.40
Wire: (per pound)				
Bright wire	5.75¢	5.75¢	5.75¢	5.525¢
Rails (per 100 lb.)				
Heavy rails	$4.45	$4.45	$4.45	$4.325
Light rails	5.35	5.35	5.35	5.20
Semifinished Steel: (per net ton)				
Rerolling billets	$64.00	$64.00	$64.00	$62.00
Slabs, rerolling	64.00	64.00	64.00	62.00
Forging billets	78.00	78.00	78.00	75.50
Alloy blooms, billets, slabs	86.00	86.00	86.00	82.00
Wire Rod and Skelp: (per pound)				
Wire rods	4.675¢	4.675¢	4.675¢	4.525¢
Skelp	3.90	3.90	3.90	3.75
Finished Steel Composite: (per pound)				
Base price	4.797¢	4.797¢	4.797¢	4.634¢

	Mar. 29 1955	Mar. 22 1955	Mar. 1 1955	Mar. 30 1954
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	$61.19	$61.19	$61.19	$61.19
Foundry, Valley	56.50	56.50	56.50	56.50
Foundry, Southern, Cin'ti	60.43	60.43	60.43	60.43
Foundry, Birmingham	52.88	52.88	52.88	52.88
Foundry, Chicago	56.50	56.50	56.50	56.50
Basic, del'd Philadelphia	60.27	60.27	60.27	60.27
Basic, Valley furnace	56.00	56.00	56.00	56.00
Malleable, Chicago	56.50	56.50	56.50	56.50
Malleable, Valley	56.50	56.50	56.50	56.50
Ferromanganese‡, cents per lb.	9.50¢	9.50¢	9.50¢	10.00¢
‡ 74-76 pct Mn base.				
Pig Iron Composite: (per gross ton)				
Pig iron	$56.59	$56.59	$56.59	$56.59
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	$38.50	$38.50	$38.50	$25.50
No. 1 steel, Phila. area	*37.00*	38.50	38.25	21.50
No. 1 steel, Chicago	35.50	35.50	35.50	26.00
No. 1 bundles, Detroit	29.50	29.00	29.00	16.50
Low phos., Youngstown	37.50	37.50	36.50	27.50
No. 1 mach'y cast, Pittsburgh	43.50	43.50	43.50	41.50
No. 1 mach'y cast, Philadel'a.	44.50	44.50	43.50	38.50
No. 1 mach'y cast, Chicago	46.50	46.50	45.50	37.00
Steel Scrap Composite: (per gross ton)				
No. 1 heavy melting scrap	*$37.00*	$37.50	$36.75	$24.33
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.38	$14.38	$14.38	$14.38
Foundry coke, prompt	16.75	16.75	16.75	16.75
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	36.00	33.00	33.00	29.875‡
Copper, Lake, Conn.	33.00	33.00	33.00	30.00
Tin, Straits, New York	91.25†	90.875*	90.125	95.50
Zinc, East St. Louis	11.50	11.50	11.50	10.25
Lead, St. Louis	14.80	14.80	14.80	13.30
Aluminum, virgin ingot	23.20	23.20	23.20	21.50
Nickel, electrolytic	67.67	67.67	67.67	63.08
Magnesium, ingot	27.75	27.75	27.75	27.75
Antimony, Laredo, Tex.	28.50	28.50	28.50	28.50

† Tentative. ‡ Average. * Revised.

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Steel Scrap Composite

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

←To identify producers, see Key on P. 139→

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Bethlehem *B3*	58.00	58.50	59.00	59.50	.....
Birmingham *R3*	52.38	52.88	.....	.....	.....
Birmingham *W9*	52.38	52.88	.....	.....	.....
Birmingham *U4*	52.38	52.88	56.50	.....	.....
Buffalo *R3*	56.00	56.50	57.00	.....	.....
Buffalo *I11*	56.00	56.50	57.00	.....	.....
Buffalo *W6*	56.00	56.50	57.00	.....	.....
Chicago *I4*	56.00	56.50	56.50	57.00	.....
Cleveland *A5*	56.00	56.50	56.50	57.00	61.00
Cleveland *R3*	56.00	56.50	56.50	.....	.....
Daingerfield *L3*	52.50	52.50	52.50	.....	.....
Duluth *I4*	56.00	56.50	56.50	57.00	.....
Erie *I4*	56.00	56.50	56.50	57.00	.....
Everett *M6*	.....	61.00	61.50	.....	.....
Fontana *K1*	62.00	62.50	.....	.....	.....
Geneva, Utah *C7*	56.00	56.50	.....	.....	.....
Granite City *G2*	57.90	58.40	58.90	.....	.....
Hubbard *V1*	.....	.....	56.50	.....	.....
Minnequa *C6*	58.00	59.00	59.00	.....	.....
Monessen *P6*	56.00	.....	.....	.....	.....
Neville Isl. *P4*	56.00	56.50	56.50	.....	.....
N. Tonawanda *T1*	.....	56.50	57.00	.....	.....
Pittsburgh *U1*	56.00	.....	.....	57.00	.....
Sharpsville *S3*	56.00	56.50	56.50	57.00	.....
So. Chicago *R3*	56.00	.....	56.50	.....	.....
Steelton *B3*	58.00	58.50	59.00	59.50	64.00
Swedeland *A2*	58.00	58.50	59.00	59.50	.....
Toledo *I4*	56.00	56.50	56.50	57.00	.....
Troy, N. Y. *R3*	58.00	58.50	59.00	59.50	64.00
Youngstown *Y1*	.....	.....	56.50	57.00	.....

DIFFERENTIALS: Add 50¢ per ton for each 0.25 pct silicon over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.50 pct manganese over 1 pct, $2 per ton for 0.5 to 0.75 pct nickel, $1 for each additional, 0.25 pct nickel. Subtract 38¢ per ton for phosphorus content 0.70 and over.

Silvery Iron: Buffalo, *H1*, $66.25; Jackson, *J1, G1*, $65.00. Add $1.00 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 17 pct. Add $1 per ton for 0.75 pct or more phosphorus. Add 75¢ for each 0.50 pct manganese over 1.0 pct. Bessemer ferrosilicon prices are $1 over comparable silvery iron.

STAINLESS STEEL

Base price cents per lb. f.o.b. mill

Product	301	302	303	304	316	321	347 Cb	410	416	430
Ingots, rerolling	16.75	17.75	19.25	19.00	29.75	23.50	25.50	14.00	—	14.25
Slabs, billets, rerolling	21.00	23.25	25.25	24.50	38.00	30.25	46.75	18.25	—	18.5
Forg. discs, die blocks, rings	39.00	39.00	42.00	41.25	61.75	46.25	—	31.00	31.75	31.7
Billets, forging	30.00	30.25	32.75	31.75	48.25	36.00	54.75	24.00	24.50	24.5
Bars, wires, structurals	35.75	36.00	38.75	38.00	57.25	42.75	64.25	28.75	29.25	29.2
Plates	37.75	38.00	40.25	40.50	60.50	46.50	69.25	30.00	30.50	30.5
Sheets	41.75	42.00	49.25	44.50	64.50	51.25	77.50	34.25	41.25	34.7
Strip, hot-rolled	30.25	32.50	37.25	35.00	55.00	41.75	63.00	26.25	—	27.0
Strip, cold-rolled	38.75	42.00	46.00	44.50	64.50-64.75	51.25-51.50	77.50	34.25	41.25	34.75

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., *C11*; Brackenridge, Pa., *A3*; Butler, Pa., *A7*; McKeesport, Pa., *U1*; Washington, Pa., *W2, J2*; Baltimore, *E1*; Middletown, O., *A7*; Massillon, O., *R3*; Gary, *U1*; Bridgeville, Pa., *U2*; New Castle, Ind., *I2*; Ft. Wayne, *I4* Philadelphia, *D5*.

Strip: Midland, Pa., *C11*; Cleveland, *A5*; Carnegie, Pa., *S9*; McKeesport, Pa., *F1*; Reading, Pa., *C2*; Washington, Pa., *W2*; W. Leechburg, Pa., *A3*; Bridgeville, Pa., *U2*; Detroit, *M2*; Canton-Massillon, O., *R3*; Middletown, O., *A7*; Harrison, N. J., *D3*; Youngstown, *C5*; Sharon, Pa., *S1*; Butler, Pa., *A7*; Wallingford, Conn., *U3* (.25¢ per lb higher) *W1* (.25¢ per lb higher); New Bedford, Mass., *R6*.

Bar: Baltimore, *A7*; Duquesne, Pa., *U1*; Munhall, Pa., *U1*; Reading, Pa., *C2*; Titusville, Pa., *U2*; Washington, Pa., *J2*; McKeesport, Pa., *U1, F1*; Bridgeville, Pa., *U2*; Dunkirk, N. Y., *A3*; Massillon, O., *R3*; Chicago, *U1*; Syracuse, N. Y., *C11*; Watervliet, N. Y., *A3*; Waukegan, *A5*; Canton, O., *T3*; Ft. Wayne, *I4*; Philadelphia, *D5*.

Wire: Waukegan, *A5*; Massillon, O., *R3*; McKeesport, Pa., *F1*; Ft. Wayne, *J4*; Harrison, N. J., *D3*; Baltimore, *A7* Dunkirk, *A3*; Monessen, *P1*; Syracuse, *C11*; Bridgeville, *U2*.

Structurals: Baltimore, *A7*; Massillon, O., *R3*; Chicago, Ill., *J4*; Watervliet, N. Y., *A3*; Syracuse, *C11*.

Plates: Brackenridge, Pa., *A3*; Chicago, *U1*; Munhall, Pa., *U1*; Midland, Pa., *C11*; New Castle, Ind., *I2*; Middletown, *A7*; Washington, Pa., *J2*; Cleveland, Massillon, *R3*; Coatesville, Pa., *C15*; Philadelphia, *D5*.

Forged discs, die blocks, rings: Pittsburgh, *C11*; Syracuse, *C11*; Ferndale, Mich., *A3*; Washington, Pa., *J2*.

Forgings billets: Midland, Pa., *C11*; Baltimore, *A7*; Washington, Pa., *J2*; McKeesport, *F1*; Massillon, Canton, O., *R3*; Watervliet, *A3*; Pittsburgh, Chicago, *U1*; Syracuse, *C11*.

Buyer Resistance Clouds Market

High operating rates and continued activity show market health in most areas . . . But resistance drives price down in Eastern centers . . . Chicago records limited advances.

◆ NO CLEAR trend is evident in the scrap market this week.

Pittsburgh price held firm after wavering momentarily late last week. New buying early this week held the Pittsburgh market steady.

Eastern price was off as buyer resistance made itself felt, at least momentarily. A substantial purchase by a large consumer in the Philadelphia market dropped No. 1 heavy melting steel $1.50 per ton. But there were reports of smaller tonnages moving at higher prices.

Chicago registered limited advances. Detroit price moved up $1 per ton.

Export movements continued at a brisk rate, and it looked as though a planned revision in export regulations was stymied in a hassle between Commerce and State Dept.'s Commerce favors some restrictions, State opposes any change.

IRON AGE Heavy Melting Steel composite price dropped 50¢ to $37.00.

Pittsburgh . . . No. 1 heavy melting price held unchanged this week on basis of latest purchase at $39 per ton. This followed a transaction late last week that appeared to peg the price at $38-38.50 per ton. A limited amount of these orders carry an additional 50 cent freight differential. There are still some outstanding commitments on a previously reported purchase of No. 1 heavy melting at $39, based on "out of town district" prices which include freight rates above $4 per ton. No activity reported on blast furnace grades, but turnings out of Detroit are being "short-stopped" in Cleveland.

Chicago . . . While railroad prices advanced, No. 1 RR heavy melting continued to hold the line at the consumer level. Mills continued to buy at strong prices with No. 2 dealer bundles moving well at $25 and with rail grades moving at stronger prices at the consumer level. Market continues very strong with increasing tonnages of scrap continuing to move to out of area producers and tonnages of scrap for export continuing to mount slowly. Consumer purchases of No. 2 heavy melting reported at $34 could not be confirmed at press time though broker buying of the grade is at $33 and only smaller tonnages are available at $32.50.

Philadelphia . . . There is a general market softening all along the line. One large district producer is buying at $37.50 top for No. 1 heavy melting. Other mills are watching and waiting. There is some smaller quantity buying at higher prices. Export shipments in April will probably be somewhat less than for recent weeks.

New York . . . Export activity continued strong with plenty of ships and plenty of scrap being reported. Reaction to price softness in the East was felt by New York but weakness has not extended to export phase of operations. General feeling was that situation would continue good, barring drastic export restrictions.

Detroit . . . There were no important buys by local mills here this week but a Cleveland mill made a buy on a $30.00 F.O.B. Detroit basis. Otherwise, the scrap market seems to be marking time, waiting for the new automotive lists which will be out sometime this week. Rumors that a sale of 100,000 tons of industrial was made to a Canadian firm last week cannot be confirmed, although it seems almost certain that the sale was made.

Cleveland . . . One mill placed substantial local and springboard tonnage again last week at prevailing prices for the only major activity. Although operations in the Cleveland area this week are scheduled for 103.7 pct, one of the leading consumers has approximately 5 mos. supply of scrap on hand and in the next few weeks will take delivery on the last tonnage outstanding. The Valley market is stable with scrap inventories at a high level but steel output at a somewhat lower rate than Cleveland. Regular deliveries on smaller tonnages at prevailing prices show underlying strength if no spectacular activity.

Birmingham . . . Major steel scrap consumers in the district bought again this week on the same basis as last, but the bundle market was considerably weaker, the sole buyer taking only limited tonnages of No. 2 bundles. No. 1 heavy melting steel is very scarce, brokers report, and No. 2 is not in much greater supply.

St. Louis . . . Through an error the price on No. 1 hvy melting steel at St. Louis was given at $36 to $37 in last week's issue. The price should have been $31 to $32, which has been in effect for some time. Receipts of scrap in St. Louis industrial district are slightly ahead of the melt. The recent severe cold weather has had no effect on the movement. The differential of $1 per ton between borings and turnings has been discontinued and each is priced at $17 to $18.

Cincinnati . . . Louisville and Nashville RR strike continues to plague producers. Sufficient scrap is coming in on intermittent railroad switching service and trucks and barges are taking up slack to some extent on delivering finished steel. Area scrap market largely unchanged last week pending announcement of April tonnage by large steelmaker late this week.

Buffalo . . . Scrap dealers report little activity. They are marking time while awaiting new orders expected this week for April business.

Boston . . . Highlight of local market is the drop in price for the best steel grades. Demand from eastern Pennsylvania mills and export sources are both off slightly, contributing to the overall lag. No serious slump is seen but in terms of recent brisk activity, the market is off a shade.

West Coast . . . Scrap demand in Los Angeles and Seattle is quite strong. Market is quiet in the San Francisco Bay Area. Supplies are adequate and no price changes are seen at present.

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FORENTRACO

Scrap Prices *(Effective Mar. 29, 1955)*

Pittsburgh

No. 1 hvy. melting	$38.00 to $39.00
No. 2 hvy. melting	35.00 to 36.00
No. 1 bundles	35.00 to 36.00
No. 2 bundles	31.00 to 32.00
Machine shop turn.	22.00 to 23.00
Mixed bor. and ms. turns.	22.00 to 23.00
Shoveling turnings	26.00 to 27.00
Cast iron borings	26.00 to 27.00
Low phos. punch'gs, plate	41.00 to 42.00
Heavy turnings	35.00 to 36.00
No. 1 RR. hvy. melting	40.50 to 41.50
Scrap rails, random lgth.	46.00 to 47.00
Rails 2 ft and under	51.00 to 52.00
RR. steel wheels	45.00 to 46.00
RR. spring steel	45.00 to 46.00
RR. couplers and knuckles	45.00 to 46.00
No. 1 machinery cast.	43.00 to 44.00
Cupola cast	39.00 to 40.00
Heavy breakable cast.	34.00 to 35.00

Chicago

No. 1 hvy. melting	$35.00 to $36.00
No. 2 hvy. melting	32.00 to 33.00
No. 1 factory bundles	36.00 to 37.00
No. 1 dealers' bundles	35.00 to 36.00
No. 2 dealers' bundles	34.00 to 35.00
Machine shop turn.	17.00 to 18.00
Mixed bor. and turn.	19.00 to 20.00
Shoveling turnings	19.00 to 20.00
Cast iron borings	19.00 to 20.00
Low phos. forge crops	40.00 to 41.00
Low phos. punch'gs, plate	38.00 to 39.00
Low phos. 3 ft and under	37.00 to 38.00
No. 1 RR. hvy. melting	38.00 to 39.00
Scrap rails, random lgth.	41.00 to 42.00
Rerolling rails	51.00 to 52.00
Rails 2 ft and under	50.00 to 51.00
Locomotive tires, cut	37.00 to 38.00
Cut bolsters & side frames	38.00 to 39.00
Angles and splice bars	44.00 to 45.00
RR. steel car axles	43.00 to 44.00
RR. couplers and knuckles	40.00 to 41.00
No. 1 machinery cast.	46.00 to 47.00
Cupola cast	41.00 to 42.00
Heavy breakable cast.	34.00 to 36.00
Cast iron brake shoes	35.00 to 36.00
Cast iron car wheels	37.00 to 38.00
Malleable	45.00 to 47.00
Stove plate	36.00 to 37.00

Philadelphia Area

No. 1 hvy. melting	$36.50 to $37.50
No. 2 hvy. melting	33.00 to 34.00
No. 1 bundles	36.50 to 37.50
No. 2 bundles	29.00 to 30.00
Machine shop turn.	21.50 to 22.50
Mixed bor. short turn.	21.50 to 22.50
Cast iron borings	20.50 to 21.50
Shoveling turnings	24.50 to 25.50
Clean cast chem. borings	28.00 to 29.00
Low phos. 5 ft and under	41.50 to 42.50
Low phos. 2 ft and under	42.00 to 43.00
Low phos. punch'gs	42.00 to 43.00
Elec. furnace bundles	40.00 to 41.00
Heavy turnings	35.00 to 36.00
RR. steel wheels	41.50 to 42.50
RR. spring steel	41.50 to 42.50
Rails 18 in. and under	51.00 to 52.00
Cupola cast	36.00 to 38.00
Heavy breakable cast.	38.00 to 39.00
Cast iron car wheels	44.00 to 45.00
Malleable	44.00 to 45.00
Unstripped motor blocks	27.00 to 28.00
No. 1 machinery cast.	44.00 to 45.00
Charging box cast.	37.00 to 38.00

Cleveland

No. 1 hvy. melting	$34.00 to $36.00
No. 2 hvy. melting	30.00 to 31.00
No. 1 bundles	34.00 to 36.00
No. 2 bundles	29.00 to 30.00
No. 1 busheling	34.00 to 36.00
Machine shop turn.	18.00 to 19.00
Mixed bor. and turn.	23.00 to 25.00
Shoveling turnings	23.00 to 25.00
Cast iron borings	23.00 to 25.00
Cut struct'r'l & plates, 2 ft & under	42.00 to 43.00
Drop forge flashings	34.00 to 36.00
Low phos. punch'gs, plate	34.00 to 36.00
Foundry steel, 2 ft & under	40.50 to 41.50
No. 1 RR. heavy melting	36.00 to 37.00
Rails 2 ft and under	49.00 to 50.00
Rails 18 in. and under	50.00 to 51.00
Railroad grate bars	27.00 to 28.00
Steel axle turnings	27.00 to 28.00
Railroad cast.	45.00 to 46.00
No. 1 machinery cast.	45.00 to 46.00
Stove plate	42.00 to 43.00
Malleable	44.00 to 45.00

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Youngstown

No. 1 hvy. melting	$37.00 to $38.00
No. 2 hvy. melting	34.00 to 35.00
No. 1 bundles	37.00 to 38.00
No. 2 bundles	28.00 to 29.00
Machine shop turn.	20.00 to 21.00
Shoveling turnings	.... 26.00
Cast iron borings	.... 26.00
Low phos. plate	37.00 to 38.00

Buffalo

No. 1 hvy. melting	$32.00 to $33.00
No. 2 hvy. melting	29.00 to 30.00
No. 1 busheling	32.00 to 33.00
No. 1 bundles	32.00 to 33.00
No. 2 bundles	27.00 to 28.00
Machine shop turn.	20.50 to 21.50
Mixed bor. and turn.	22.00 to 23.00
Shoveling turnings	23.00 to 24.00
Cast iron borings	22.00 to 23.00
Low phos. plate	35.00 to 36.00
Scrap rails, random lgth.	35.00 to 36.00
Rails 2 ft and under	42.00 to 43.00
RR. steel wheels	36.00 to 37.00
RR. spring steel	36.00 to 37.00
RR. couplers and knuckles	36.00 to 37.00
No. 1 machinery cast.	42.00 to 43.00
No. 1 cupola cast.	37.00 to 38.00

Detroit

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	$29.00 to $30.00
No. 2 hvy. melting	23.00 to 24.00
No. 1 bundles, openhearth	29.00 to 30.00
No. 2 bundles	21.00 to 22.00
New busheling	28.00 to 29.00
Drop forge flashings	27.00 to 28.00
Machine shop turn.	13.00 to 14.00
Mixed bor. and turn.	15.50 to 16.50
Shoveling turnings	16.50 to 17.50
Cast iron borings	16.50 to 17.50
Low phos. punch'gs, plate	28.50 to 29.50
No. 1 cupola cast.	34.00 to 36.00
Heavy breakable cast.	25.00 to 27.00
Stove plate	30.00 to 32.00
Automotive cast.	38.00 to 40.00

St. Louis

No. 1 hvy. melting	$31.00 to $32.00
No. 2 hvy. melting	29.00 to 30.00
No. 1 bundles	31.00 to 32.00
No. 2 bundles	24.50 to 25.50
Machine shop turn.	15.50 to 16.50
Cast iron borings	17.00 to 18.00
Shoveling turnings	17.00 to 18.00
No. 1 RR. hvy. melting	36.00 to 37.00
Rails, random lengths	40.50 to 41.50
Rails, 18 in. and under	47.50 to 48.50
Locomotive, tires uncut	36.00 to 37.00
Angles and splice bars	36.00 to 37.00
Std. steel car axles	35.50 to 36.50
RR. spring steel	37.00 to 38.00
Cupola cast.	42.00 to 43.00
Hvy breakable cast.	33.00 to 34.00
Cast iron brake shoes	32.00 to 33.00
Stove plate	34.00 to 35.00
Cast iron car wheels	35.00 to 36.00
Malleable	35.00 to 36.00
Unstripped motor blocks	32.50 to 33.50

Boston

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	$28.00 to $29.00
No. 2 hvy. melting	23.00 to 24.00
No. 1 bundles	28.00 to 29.00
No. 2 bundles	20.00 to 21.00
No. 1 busheling	28.00 to 28.50
Elec. furnace, 2 ft & under	32.00 to 33.00
Machine shop turn.	12.00 to 13.50
Mixed bor. and short turn.	14.00 to 15.00
Shoveling turnings	15.00 to 16.00
Clean cast chem. borings	18.00 to 19.00
No. 1 machinery cast.	31.00 to 32.00
Mixed cupola cast.	29.00 to 30.00
Heavy breakable cast.	27.00 to 28.00
Stove plate	27.00 to 28.00
Unstripped motor blocks	17.00 to 18.00

New York

Brokers buying prices per gross ton, on carr

No. 1 hvy. melting	.... $32.50
No. 2 hvy. melting	.... 28.50
No. 2 bundles	$24.00 to 25.00
Machine shop turn.	11.00 to 12.00
Mixed bor. and turn.	12.00 to 13.00
Shoveling turnings	14.00 to 15.00
Clean cast chem. borings	22.00 to 23.00
No. 1 machinery cast.	37.00 to 39.00
Mixed yard cast.	31.00 to 32.00
Charging box cast.	30.00 to 31.00
Heavy breakable cast.	30.00 to 31.00
Unstripped motor blocks	22.00 to 23.00

Birmingham

No. 1 hvy. melting	$32.00 to $33.00
No. 2 hvy. melting	27.00 to 28.00
No. 1 bundles	32.00 to 33.00
No. 2 bundles	22.00 to 23.00
No. 1 busheling	32.00 to 33.00
Machine shop turn.	18.00 to 19.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	17.00 to 18.00
Electric furnace bundles	32.00 to 33.00
Bar crops and plate	36.00 to 37.00
Structural and plate, 2 ft	36.00 to 37.00
No. 1 RR. hvy. melting	36.00 to 37.00
Scrap rails, random lgth.	39.00 to 40.00
Rails, 18 in. and under	43.00 to 44.50
Angles & splice bars	40.00 to 41.00
Rerolling rails	43.00 to 44.00
No. 1 cupola cast.	45.00 to 46.00
Stove plate	42.00 to 43.00
Charging box cast.	32.00 to 33.00
Cast iron car wheels	33.00 to 34.00
Unstripped motor blocks	35.50 to 36.50
Mashed tin cans	15.00 to 16.00

Cincinnati

Brokers buying prices per gross ton, on cars

No. 1 hvy. melting	$33.00 to $34.00
No. 2 hvy. melting	30.00 to 31.00
No. 1 bundles	33.00 to 34.00
No. 2 bundles	24.00 to 25.00
Machine shop turn.	19.00 to 20.00
Mixed bor. and turn.	20.00 to 21.00
Shoveling turnings	22.00 to 23.00
Cast iron borings	20.00 to 21.00
Low phos., 18 in. & under	37.00 to 38.00
Rails, random lengths	41.00 to 42.00
Rails, 18 in. and under	47.00 to 48.00
No. 1 cupola cast.	39.00 to 40.00
Hvy. breakable cast.	34.00 to 35.00
Drop broken cast.	44.00 to 45.00

San Francisco

No. 1 hvy. melting	.... $27.00
No. 2 hvy. melting	.... 25.00
No. 1 bundles	.... 26.00
No. 2 bundles	.... 22.00
No. 3 bundles	.... 18.00
Machine shop turn.	.... 8.00
Cast iron borings	.... 9.00
No. 1 RR. hvy. melting	.... 27.00
No. 1 cupola cast.	.... 40.00

Los Angeles

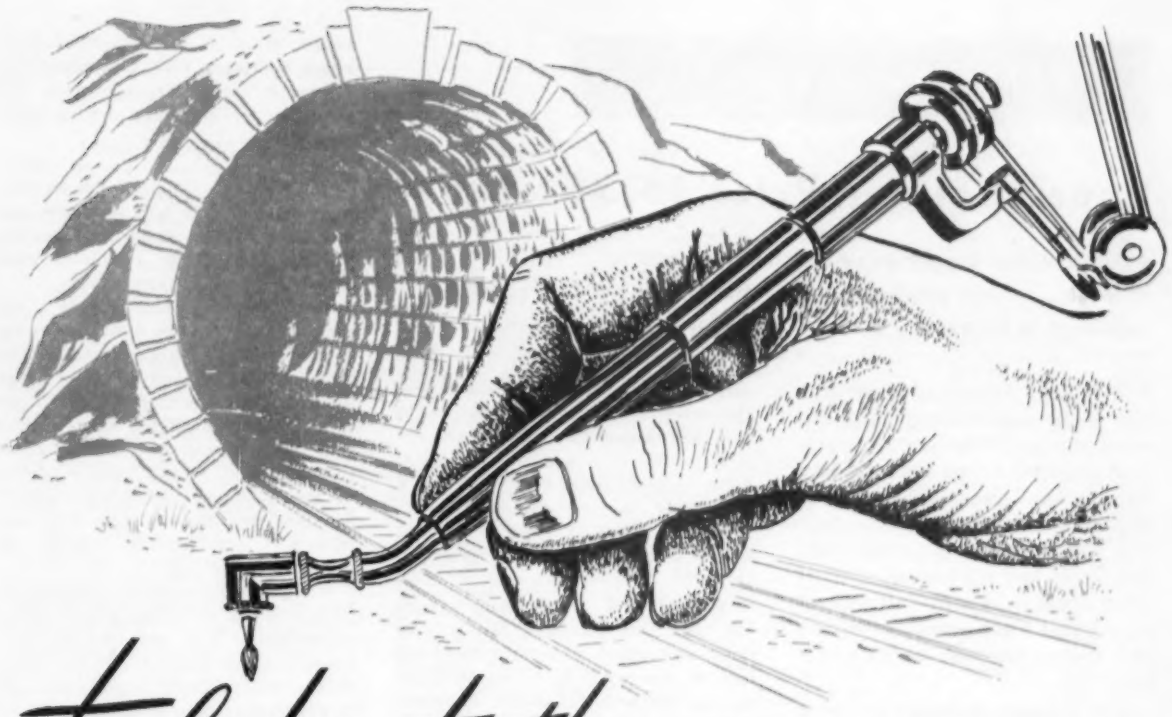
No. 1 hvy. melting	.... $30.00
No. 2 hvy. melting	.... 28.00
No. 1 bundles	.... 29.00
No. 2 bundles	.... 23.00
No. 3 bundles	.... 20.00
Machine shop turn.	.... 8.00
Shoveling turnings	.... 10.00
Cast iron borings	.... 10.00
Elec. furn. 1 ft. and under	.... 30.00
No. 1 RR. hvy. melting	.... 30.00
No. 1 cupola cast.	$41.00 to 42.00

Seattle

No. 1 hvy. melting	.... $31.00
No. 2 hvy. melting	.... 27.00
No. 1 bundles	.... 23.00
No. 2 bundles	.... 20.00
No. 3 bundles	.... 16.00
No. 1 cupola cast.	.... 35.00
Mixed yard cast.	.... 35.00

Hamilton, Ont.

No. 1 hvy. melting	.... $32.00
No. 2 hvy. melting	.... 29.00
No. 1 bundles	.... 32.00
No. 2 bundles	.... 26.00
Mixed steel scrap	.... 26.00
Bushelings	.... 27.00
Bush., new fact prep'd	.... 30.00
Bush., new fact unprep'd	26.00
Short steel turnings	$16.00 to 17.00
Mixed bor. and turn.	16.00 to 17.00
Rails, rerolling	.... 41.00
Cast scrap	42.00 to 45.00



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Boost Copper Price to 36c Level

Long expected copper price hike finally comes through . . . Some producers up electrolytic 3¢ per lb. . . . Others expected to follow . . . Cut titanium prices.

◆ THE long expected copper price rise finally came through early this week. Phelps Dodge and Anaconda both announced that effective Mar. 29 they were upping the price of electrolytic copper 3¢ per lb to a 36¢ per lb level. At press time Kennecott had not stated what its price would be, however, it was assumed that other copper producers and custom smelters would follow suit.

The increase in copper prices is not expected to have any immediate effect in easing the copper shortage, but it was hoped by some in the industry that the European price might ease off to a point nearer the new U. S. price. If this happens U. S. copper consumers could expect to get a larger share of metal from Chile and other sources.

Scarcity of nonferrous metals created a lot of excitement late last week as the government, acknowledging the tight supply situation, cut back its stockpile requirements for nickel and aluminum. Similar action was expected on copper sometime this week. The copper situation, however, was further complicated by a wildcat strike at the big Chuquicamata copper mine in Chile.

COPPER . . . No immediate easing of the tight copper supply situation was expected as a result of the 3¢ per lb price increase that went through this week. It was still expected that the government would take action to help out copper consumers.

The strike at Anaconda's Chuquicamata copper mine proved to be a quickie as the workers returned to their jobs Saturday. Apr. 4 was set as the new strike deadline date.

ALUMINUM . . . Seeking to ease the aluminum shortage, the government authorized diversion of 75,000 tons of the metal from the stockpile during the next 3 months. A minor surprise in the government announcement was the fact that no mention was made concerning makeup payments of aluminum to the stockpile at a later date. Distribution of the stockpile-diverted aluminum will be left to the producers rather than the government.

It seemed likely that if the diversion of 75,000 tons of aluminum from the stockpile doesn't ease the supply situation, there will be another cancellation of aluminum stockpile deliveries in the third quarter.

Since cancellation of deliveries of primary aluminum to the stockpile will not immediately aid secondary smelters, it was thought that the government might set up quotas on exports of aluminum scrap, though State Dept. is opposed.

NICKEL . . . In a similar move to that made with aluminum, Office of Defense Mobilization last week adjusted its nickel stockpile requirements so that 3 million lb more of the metal would be available to industry during the next 3 months. The action, taken at the request of Commerce Secretary Weeks, continues the February-March arrangements for releasing nickel to the civilian economy.

TITANIUM . . . Price cut on titanium sponge and mill products was put through this week by Titanium Metals Corp. Other producers were expected to follow suit.

The price reductions include a 55¢ per lb cut on sponge metal, bringing it down to $3.95 per lb. Reductions in mill products, including extras, range from $1 per lb to as much as $3 per lb. TMC described the sponge price drop as "a single mark-down greater than the total of all previous price declines" in the industry's history. Changes are effective Apr. 1 on orders and commitments already on company books.

Mill product base price changes include: Sheets and strip, commercially pure, from $15 per lb to $14-$14.50; alloy, from $17.50 to 16.50. Plates, commercially pure, from $12 to $11.50-$12; semi-alloy, from $13.50 to $12.50-$12.75. Wire, commercially pure, from $11 to $10.50-$11; semi-alloy, from $13 to $12.50. Bars and forging billets, commercially pure, from $9 to $8.50-$8.75; semi-alloy from $9 to $8.50-$9.00. Application of extras revisions increases not saving to consumers between $1 to $3 per lb.

The company said the price reductions were made possible as a result of growing productive efficiency. TMC indicated there would be additional price cuts as its technology advances and capacity increases.

MAGNESIUM . . . Effective Mar. 21, Dow Chemical Corp. raised the price of its magnesium products 1¢ to 8¢ per lb. Price of primary magnesium and alloy ingot was raised 1.5¢ per lb. The AZ91B diecasting was upped 1¢ per lb. Standard grade sheet was boosted 3¢ per lb on all grades except 0.125 in., which was increased 1.5¢ per lb. Extrusions were upped 2¢ to 8¢ per lb depending on the shape and the alloy used.

LEAD, ZINC . . . Unlike copper, aluminum, nickel and titanium, last week was fairly quiet as far as lead and zinc were concerned. Most sellers reported orders were coming in at a satisfactory rate.

Producers are beginning to fidget about whether or not the government will continue its stockpiling program after the scheduled termination date of June 31.

Daily Nonferrous Metal Prices

(Cents per lb except as noted)

	Mar. 23	Mar. 24	Mar. 25	Mar. 26	Mar. 28	Mar. 29
Copper, electro, Conn.	33.00	33.00	33.00	33.00	33.00	33.00–36.00
Copper, Lake, delivered	33.00	33.00	33.00	33.00	33.00	33.00
Tin, Straits, New York	91.25	91.00	91.375	....	91.25	91.25*
Zinc, East St. Louis	11.50	11.50	11.50	11.50	11.50	11.50
Lead, St. Louis	14.80	14.80	14.80	14.80	14.80	14.80

Note: Quotations are going prices **Tentative*

MILL PRODUCTS

(Cents per lb, unless otherwise noted)

Aluminum

(Base 30,000 lb, f.o.b. ship. pt., frt. allowed)

Alloy	Flat Sheet		Plate	
	0.032 in.	0.081 in.	0.136-0.249 in.	0.250-3.000 in.
1100, 3003	39.1	37.1	35.9	35.5
3004	44.0	39.8	38.1	37.6
5052	46.7	41.9	40.2	39.3
2024-O, -OAL	49.4	40.8	39.3	39.4
7075-O, -OAL	60.8	49.1	46.8	46.8

Extruded Solid Shapes: Shape factors 1 to 5, 38.7¢ to 86.7¢; 12 to 14, 39.4¢ to $1.04; 24 to 26, 42.2¢ to $1.35; 36 to 38, 49.8¢ to $1.97.

Rod, Round: Rolled, 1.064-4-5 in. 1100-F, 42.6¢ to 46.1¢; cold finished, 0.375-3.499 in., 1100-F, 47.3¢ to 42.4¢.

Screw Machine Stock: Rounds, 2011-T3, ¼-11/32 in., 63.5¢ to 50.1¢; ⅝-1½ in., 49.9¢ to 46.9¢; 1 9/16-3 in., 45.7¢ to 42.7¢. Base 5000 lb.

Drawn Wire: Coiled, 0.051-0.374 in., 1100, 47.1¢ to 35.8¢; 5052, 56.7¢ to 44.4¢; 2017-T4, 64.3¢ to 44.7¢; 6061-T4, 59.5¢ to 44.1¢.

Extruded Tubing: Rounds, 6063-T6, OD 1¼-2 in., 44.4¢ to 54.8¢; 2-4 in., 40.8¢ to 54.6¢; 4-6 in., 40.8¢ to 49.8¢; 6-9 in., 41.4¢ to 52.1¢.

Roofing Sheet: Flat, per sheet, 0.032-in., 42⅝ x 60-in., $2.998; x 96-in., $4.801; x 120-in., $6.002; x 144-in., $7.202. Coiled sheet, per lb, 0.019 in. x 28 in., 30.9¢.

Magnesium

(F.o.b. mill, freight allowed)

Sheet & Plate: FS1-O ¼ in., 59¢; 3/16 in., 60¢; ½ in., 59¢; 0.064 in., 76¢; 0.032 in., 97¢. Specification grade higher. Base 30,000 lb.

Extruded Round Rod: M, diam ¼ to 0.311 in., 79¢; ½ to ¾ in., 62.5¢; 1¼ to 1.749 in., 59¢; 2½ to 5 in., 54.5¢. Other alloys higher. Base up to ⅝ in. diam, 10,000 lb; ⅝ to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.

Extruded Solid Shapes: Rectangles: M. In weight per ft for perimeters less than size indicated: 0.10 to 0.11 lb, 3.5 in., 67.3¢; 0.22 to 0.25 lb, 5.9 in., 64.3¢; 0.50 to 0.59 lb, 8.6 in., 61.7¢; 1.8 to 2.59 lb, 19.5 in., 59.8¢; 4 to 6 lb, 28 in., 55¢. Other alloys higher. Base, in weight per ft of shape: Up to ½ lb, 10,000 lb; ½ to 1.80 lb, 20,000 lb; 1.80 lb and heavier, 30,000 lb.

Extruded Round Tubing: M, 0.049 to 0.057 in. wall thickness: OD ¼ to 5/16 in., $1.46; 5/16 to ⅜ in., $1.32; ½ to ⅝ in., 99¢; 1 to 2 in., 82¢; 0.165 to 0.219 in. wall: OD, ⅝ to ¾ in., 67¢; 1 to 2 in., 63¢; 3 to 4 in., 62¢. Other alloys higher. Base, OD: Up to 1½ in., 10,000 lb; 1½ to 3 in., 20,000 lb; over 3 in., 30,000 lb.

Titanium

(10,000 lb base, f.o.b. mill)

Commercially pure and alloy grades: Sheets and strip, HR or CR, $15; Plate, HR, $12; Wire, rolled and/or drawn, $10; Bar, HR or forged, $9; Forgings, $9.

Nickel, Monel, Inconel

(Base prices, f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	102	78	99
Strip, CR	102	87	126
Rod, Bar, HR	87	69	93
Angles, HR	87	69	93
Plate, HR	97	82	96
Seamless Tube	122	108	153
Shot, Blocks		65	

Copper, Brass, Bronze

(Freight included on 500 lb)

	Sheet	Rods	Extruded Shapes
Copper	49.79		51.86
Copper, h-r	51.76	48.11	
Copper, drawn		49.36	
Low brass	47.35	47.29	
Yellow brass	44.37	44.21	
Red brass	48.44	48.38	
Naval brass		42.49	43.75
Leaded brass	44.37	35.36	41.41
Com. bronze	50.08	50.02	
Mang. bronze		46.02	47.58
Phos. bronze	70.12	70.62	
Muntz metal		42.15	43.40
Ni silver, 10 pct	58.25	60.58	

Beryllium copper, CR, 1.9% Be, Base 2000 lb, f.o.b.

Strip	$1.71
Rod, bar, wire	1.65

PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed	23.20
Aluminum pig	21.50
Antimony, American, Laredo, Tex.	28.50
Beryllium copper, per lb conta'd Be	$40.00
Beryllium aluminum 5% Be, Dollars per lb contained Be	$72.75
Bismuth, ton lots	$2.25
Cadmium, del'd	$1.70
Cobalt, 97-99% (per lb)	$2.60 to $2.67
Copper, electro, Conn. Valley	33.00 to 36.00
Copper, Lake, delivered	33.00
Gold, U. S. Treas., per troy oz.	$35.00
Indium, 99.8%, dollars per troy oz.	$2.25
Iridium, dollars per troy oz.	$110 to $120
Lead, St. Louis	14.80
Lead, New York	15.00
Magnesium, 99.8+%, f.o.b. Freeport, Tex., 10,000 lb, pig	28.50
ingot	29.25
Magnesium, sticks, 100 to 500 lb	49.00
Mercury, dollars per 76-lb flask, f.o.b. New York	$323 to $324
Nickel electro, f.o.b. N. Y. warehouse	67.67
Nickel oxide sinter, at Copper Cliff, Ont., contained nickel	60.75
Palladium, dollars per troy oz.	$18 to $20
Platinum, dollars per troy oz.	$78 to $80
Silver, New York, cents per troy oz.	88.50
Tin, New York	91.125
Titanium, sponge, grade A-1	$4.50
Zinc, East St. Louis	11.50
Zinc, New York	12.00
Zirconium copper, 50 pct	$6.20

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5-5 ingot	
No. 115	34.00
No. 120	33.50
No. 123	33.00
80-10-10 ingot	
No. 305	38.00
No. 315	35.75
88-10-2 ingot	
No. 210	47.75
No. 215	44.25
No. 245	39.25
Yellow ingot	
No. 405	29.75
Manganese bronze	
No. 421	32.25

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys	
0.30 copper, max.	31.50-32.50
0.60 copper, max.	31.25-32.25
Piston alloys (No. 122 type)	30.00-31.50
No. 12 alum. (No. 2 grade)	29.25-30.25
108 alloy	30.00-31.00
195 alloy	31.00-32.50
13 alloy (0.60 copper max.)	31.25-32.25
ASX-679	30.00-31.00

Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—95-97½%	31.50-32.50
Grade 2—92-95%	30.50-31.50
Grade 3—90-92%	29.75-30.50
Grade 4—85-90%	28.75-29.50

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, freight allowed, 5000 lb lots)

Copper	
Cast, oval, 15 in. or longer	44.92
Electrodeposited	39.78
Flat rolled	45.42
Brass, 80-20	
Cast, oval, 15 in. or longer	43.515
Zinc, flat cast	20.25
Ball, anodes	18.50
Nickel, 99 pct plus	
Cast	90.50*
Cadmium	$1.70
Silver 999 fine, rolled, 100 oz. lots per troy oz., f.o.b. Bridgeport, Conn.	94½

Chemicals

(Cents per lb, f.o.b. shipping points)

Copper cyanide, 100 lb drum	63.00
Copper sulphate, 99.5 crystals, bbl.	12.85
Nickel salts, single or double, 4-100 lb bags, frt. allowed	31.25*
Nickel chloride, 300 to 400 lb	43.50*
Silver cyanide, 100 oz. lots, per oz.	75½
Sodium cyanide, 96 pct domestic 200 lb drums	19.25
Zinc cyanide, 100 lb drum	54.30

*Effective Jan. 3.

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	29	28¼
Yellow brass	21⅞	20⅛
Red brass	25½	24⅝
Comm. bronze	26⅛	25⅞
Mang. bronze	20⅝	19¼
Yellow brass rod ends	21⅝	

Custom Smelters Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	33⅛
No. 2 copper wire	32
Light copper	30¼
*Refinery brass	29.50—30

* Dry copper content.

Ingot Makers Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	33½
No. 2 copper wire	32
Light copper	30
No. 1 composition	27½—28
No. 1 comp. turnings	27¼—27¾
Rolled brass	20½
Brass pipe	21 —21½
Radiators	22 —22½
Aluminum	
Mixed old cast	17½—18½
Mixed new clips	18 —20
Mixed turnings, dry	17½—19
Pots and pans	18 —19

Dealers' Scrap

(Dealers' buying price, f.o.b. New York in cents per pound)

Copper and Brass	
No. 1 heavy copper and wire	30 —30½
No. 2 heavy copper and wire	29 —29½
Light copper	27 —27½
New type shell cuttings	27 —27⅞
Auto radiators (unsweated)	19½—20
No. 1 composition	25 —25⅛
No. 1 composition turnings	23½—24
Unlined red car boxes	18½—19
Cocks and faucets	20½—21
Mixed heavy yellow brass	18 —18⅛
Old rolled brass	18 —18⅛
Brass pipe	20½—21
New soft brass clippings	21½—22
Brass rod ends	19 —20
No. 1 brass rod turnings	18⅛—19
Aluminum	
Alum. pistons and struts	11½—12⅛
Aluminum crankcases	15½—16
1100 (2S) aluminum clippings	18 —18⅛
Old sheet and utensils	15½—16
Borings and turnings	9½—10
Misc. cast aluminum	14½—15
2024 (24s) clippings	15 —15⅛
Zinc	
New zinc clippings	7
Old zinc	6⅛
Zinc routings	3⅛— 3⅜
Old die cast scrap	3¼— 3½
Nickel and Monel	
Pure nickel clippings	57
Clean nickel turnings	40
Nickel anodes	57
Nickel rod ends	57
New Monel clippings	28
Clean Monel turnings	21
Old sheet Monel	26
Nickel silver clippings, mixed	16½
Nickel silver turnings, mixed	13½
Lead	
Soft scrap lead	11½—11⅝
Battery plates (dry)	6½— 6⅝
Batteries, acid free	4⅛
Magnesium	
Segregated solids	18½—19
Castings	17½—18
Miscellaneous	
Block tin	70 —75
No. 1 pewter	50 —55
No. 1 auto babbitt	45
Mixed common babbitt	12 —12½
Solder joints	17
Siphon tops	46
Small foundry type	16½
Monotype	15
Lino. and stereotype	13½—14
Electrotype	12¼—12½
Hand picked type shells	9½—10
Lino. and stereo. dross	6½
Electro dross	5

IRON AGE

STEEL PRICES

(Effective Mar. 29, 1955)

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BILLETS, BLOOMS, SLABS			PILING	SHAPES STRUCTURALS			STRIP					
		Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide-Flange	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot-rolled	Alloy Cold-rolled
EAST	Bethlehem, Pa.			$86.00 *B3*		4.30 *B3*	6.45 *B3*	4.30 *B3*						
	Buffalo, N. Y.	$64.00 *B3*	$78.00 *B3, R3*	$86.00 *B3, R3*	5.075 *B3*	4.30 *B3*	6.45 *B3*	4.30 *B3*	4.05 *B3,R3*	5.75 *R7, S10*	6.15 *B3*	8.425 *B3*		
	Claymont, Del.													
	Coatesville, Pa.													
	Conshohocken, Pa.								4.10 *A2*	5.80 *A2*	6.15 *A2*			
	New Bedford, Mass.									6.20 *R6*				
	Johnstown, Pa.	$64.00 *B3*	$78.00 *B3*	$86.00 *B3*		4.30 *B3*	6.45 *B3*		4.05 *B3*					
	Fairless, Pa.													
	New Haven, Conn.									6.20 *D1* 6.50 *A5*				
	Phoenixville, Pa.					4.20 *P2*		4.30 *P2*						
	Sparrows Pt., Md.								4.05 *B3*	5.75 *B3*	6.15 *B3*	8.425 *B3*		
	Bridgeport, Wallingford, Conn.	$69.00 *N8*	$83.00 *N8*						4.35 *N8*	6.20 *W1*			7.90 *N8*	
	Pawtucket, R. I. Worcester, Mass.									6.30 *N7* 6.60 *A5*				12.75 *A5* 12.90 *N7*
MIDDLE WEST	Alton, Ill.								4.225 *L1*					
	Ashland, Ky.								4.05 *A7*					
	Canton-Massillon, Dover, Ohio		$80.00 *R3*	$86.00 *R3, T3*										12.45 *G4*
	Chicago, Ill.	$64.00 *U1*	$78.00 *R3, U1,W8*	$86.00 *U1, W8,R3*	5.075 *U1*	4.25 *U1, W8*	6.40 *U1, Y1*	4.25 *U1*	4.05 *A1,N4 W8*	5.85 *A1*				
	Cleveland, Ohio									5.75 *A5,J3*		8.60 *A5*		12.45 *A5*
	Detroit, Mich.			$86.00 *R5*					4.15 *G3,M2*	5.85 *D1,D2, G3,M2,P11*	6.25 *G3*	8.70 *D2, G3*		
	Duluth, Minn.													
	Gary, Ind. Harbor, Indiana	$64.00 *U1*	$78.00 *U1*	$86.00 *U1, Y1*	5.075 *I3*	4.25 *I3, U1*	6.40 *U1, I3*		4.05 *I3, U1,Y1*	5.85 *I3*	6.15 *U1, I3,Y1*	8.60 *Y1*	6.70 *U1, Y1*	
	Sterling, Ill.								4.15 *N4*					
	Indianapolis, Ind.									5.90 *C5*				
	Newport, Ky.												6.70 *Y5*	
	Middletown, Ohio									5.75 *A7*				
	Niles, Warren, Ohio Sharon, Pa.								4.05 *S1,R3*	5.75 *S1,R3, T4*	6.15 *S1, R3*	8.60 *S1, R3*	6.70 *S1*	12.45 *S1*
	Pittsburgh, Pa. Midland, Pa. Butler, Pa.	$64.00 *U1, J3*	$78.00 *J3, U1,C11*	$86.00 *U1, C11*	5.075 *U1*	4.25 *J3, U1*	6.40 *J3, U1*	4.25 *U1*	4.05 *P6*	5.75 *B4,J3*			6.70 *S9*	12.45 *S9*
	Portsmouth, Ohio								4.05 *P7*	5.75 *P7*				
	Weirton, Wheeling, Follansbee, W. Va.					4.25 *W3*			4.05 *W3*	5.75 *F3,W3*	6.15 *W3*	8.60 *W3*		
	Youngstown, Ohio		$78.00 *C10*	$86.00 *Y1, C10*		4.25 *Y1*	6.40 *Y1*		4.05 *U1,Y1*	5.75 *Y1,C5*	6.15 *U1, Y1*	8.60 *Y1*	6.70 *U1, Y1*	12.45 *C5*
WEST	Fontana, Cal.	$72.00 *K1*	$86.00 *K1*	$105.00 *K1*		4.90 *K1*	7.05 *K1*	5.25 *K1*	4.825 *K1*	7.50 *K1*	7.25 *K1*		8.10 *K1*	14.55 *K1*
	Geneva, Utah		$78.00 *C7*			4.25 *C7*	6.40 *C7*							
	Kansas City, Mo.					4.30 *S2*	6.45 *S2*				6.40 *S2*		6.95 *S2*	
	Los Angeles, Torrance, Cal.		$87.50 *B2*	$106.00 *B2*		4.95 *B2, C7*	7.10 *B2*		4.80 *B2,C7*	7.80 *C1*				
	Minnequa, Colo.					4.70 *C6*			5.15 *C6*					
	Portland, Ore.					5.00 *O2*								
	San Francisco, Niles, Pittsburgh, Cal.		$87.50 *B2*			4.90 *B2* 4.95 *P9*	7.05 *B2*		4.80 *B2,C7*					
	Seattle, Wash.		$91.50 *B2*			5.00 *B2*	7.15 *B2*		5.05 *B2, P12*					
SOUTH	Atlanta, Ga.								4.25 *A8*					
	Fairfield, Ala. City, Birmingham, Ala.	$64.00 *T2*	$78.00 *T2*			4.25 *C16, R3,T2*	6.40 *T2*		4.05 *R3, T2C16*		6.15 *T2*			
	Houston, Tex.		$83.00 *S2*	$91.00 *S2*		4.30 *S2*	6.45 *S2*				6.40 *S2*		6.95 *S2*	

IRON AGE

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		SHEETS									WIRE ROD	TINPLATE†		BLACK PLATE
		Hot-rolled *18* ga. & hvyr.	Cold-rolled	Galvanized *10* ga.	Enameling *12* ga.	Long Terne *10* ga.	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.	Hot-rolled *19* ga.		Coke* *1.25*-lb. base box	Electro* *0.25*-lb. base box	Hollowware Enameling *29* ga.
EAST	Bethlehem, Pa.													
	Buffalo, N. Y.	4.05 *B3*	4.95 *B3*				6.10 *B3*	7.50 *B3*			4.675 *W6*	† Special coated mfg. terne deduct 95¢ from 1.25-lb coke base box price. Can-making quality blackplate 55 to 128 lb. deduct $2.20 from 1.25-lb. coke base box. * COKES: 1.50-lb. add 25¢. ELECTRO: 0.50-lb. add 25¢; 0.75-lb. add 65¢; 1.00-lb. add $1.10. Differential 1.00 lb./0.25 lb. add 85¢.		
	Claymont, Del.													
	Coatesville, Pa.													
	Conshohocken, Pa.	4.10 *A2*	5.00 *A2*				6.15 *A2*							
	Harrisburg, Pa.													
	Hartford, Conn.													
	Johnstown, Pa.										4.675 *B3*			
	Fairless, Pa.	4.10 *U1*	5.00 *U1*				6.15 *U1*	7.55 *U1*				$8.90 *U1*	$7.60 *U1*	
	New Haven, Conn.													
	Phoenixville, Pa.													
	Sparrows Pt., Md.	4.05 *B3*	4.95 *B3*	5.45 *B3*			6.10 *B3*	7.50 *B3*	8.20 *B3*		4.775 *B3*	$8.90 *B3*	$7.60 *B3*	
	Worcester, Mass.										4.975 *A5*			
	Trenton, N. J.													
MIDDLE WEST	Alton, Ill.										4.85 *L1*			
	Ashland, Ky.	4.05 *A7*		5.45 *A7*	5.375 *A7*									
	Canton-Massillon, Dover, Ohio			5.45 *R1, R3*						5.175 *R1*				
	Chicago, Joliet, Ill.	4.05 *A1, W8*					6.10 *U1*				4.675 *A5, N4, R3*			
	Sterling, Ill.										4.775 *N4*			
	Ieveland, Ohio	4.05 *J3, R3*	4.95 *J3, R3*		5.375 *R3*		6.10 *J3, R3*	7.50 *J3, R3*			4.675 *A5*			
	Detroit, Mich.	4.15 *G3, M2*	5.05 *G3*				6.20 *G3*	7.60 *G3*						
	Newport, Ky.	4.05 *N5*	4.95 *N5*	5.45 *N5*										
	Gary, Ind. Harbor, Indiana	4.05 *I3, U1, Y1*	4.95 *I3, U1, Y1*	5.45 *U1, I3*	5.375 *I3, U1*	5.85 *U1*	6.10 *U1, I3, Y1*	7.50 *U1, Y1*			4.675 *Y1*	$8.80 *I3, U1, Y1*	$7.50 *I3, U1, Y1*	6.20 *U1, Y1*
	Granite City, Ill.	4.25 *G2*	5.15 *G2*	5.65 *G2*	5.575 *G2*								$7.60 *G2*	6.30 *G2*
	Kokomo, Ind.	4.15 *C9*		5.55 *C9*						5.20 *C9*	4.775 *C9*			
	Mansfield, Ohio					5.85 *E2*				5.175 *E2*				
	Middletown, Ohio		4.95 *A7*		5.375 *A7*	5.85 *A7*								
	Niles, Ohio Sharon, Pa.	4.05 *S1, R3* 5.30 *N3*	4.95 *R3* 5.975 *N3*	5.45 *N3*	6.725 *N3*	5.85 *N3*	6.10 *S1, R3*	7.50 *R3*				$8.80 *R3*	$7.50 *R3*	
	Pittsburgh, Pa. Midland, Pa. Butler, Pa.	4.05 *J3, U1, P6*	4.95 *J3, U1, P6*	5.45 *U1*	5.375 *U1*		6.10 *J3, U1*	7.50 *J3, U1*	8.20 *U1*		4.675 *A5* 4.675 *P6*	$8.80 *J3, U1*	$7.50 *J3, U1*	6.20 *U1*
	Portsmouth, Ohio	4.05 *P7*	4.95 *P7*								4.675 *P7*			
	Weirton, Wheeling, Follansbee, W. Va.	4.05 *W3, W5*	4.95 *W3, W5, F3*	5.45 *W3, W5*		5.85 *W3, W5*	6.10 *W3*	7.50 *W3*				$8.80 *W3, W5*	$7.50 *W3, W5*	6.20 *F3, W5*
	Youngstown, Ohio	4.05 *U1, Y1*	4.95 *Y1*		5.375 *Y1*		6.10 *U1, Y1*	7.50 *Y1*			4.675 *Y1*			
WEST	Fontana, Cal.	4.825 *K1*	6.05 *K1*				6.875 *K1*	8.55 *K1*			5.475 *K1*			
	Geneva, Utah	4.15 *C7*												
	Kansas City, Mo.										4.925 *S2*			
	Los Angeles, Torrance, Cal.										5.475 *C7, B2*			
	Minnequa, Colo.										4.925 *C6*			
	San Francisco, Niles, Pittsburg, Cal.	4.75 *C7*	5.90 *C7*	6.20 *C7*							5.325 *C7*	$9.55 *C7*	$8.25 *C7*	
	Seattle, Wash.													
SOUTH	Atlanta, Ga.													
	Fairfield, Ala. Alabama City, Ala.	4.05 *R3, T2*	4.95 *T2*	5.45 *R3, T2*			6.10 *T2*			5.35 *R3*	4.675 *T2, R3*	$8.90 *T2*	$7.60 *T2*	
	Houston, Tex.										4.925 *S2*			

IRON AGE

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		BARS						PLATES				WIRE
		Carbon Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfgr's. Bright
EAST	Bethlehem, Pa.				5.075 *B3*	6.625 *B3*	6.45 *B3*					
	Buffalo, N. Y.	4.30 *B3,R3*	4.30 *B3,R3*	5.45 *B5*	5.075 *B3,R3*	6.625 *B3,B5*	6.45 *B3*	4.225 *B3,R3*			6.45 *B3*	5.75 *W6*
	Claymont, Del.							4.225 *C4*		5.80 *C4*		
	Coatesville, Pa.							4.225 *L4*		5.80 *L4*	6.45 *L4*	
	Conshohocken, Pa.							4.225 *A2*	5.275 *A2*		6.45 *A2*	
	Harrisburg, Pa.							4.225 *C3*	5.275 *C3*			
	Hartford, Conn.			5.90 *R3*		6.925 *R3*						
	Johnstown, Pa.	4.30 *B3*	4.30 *B3*		5.075 *B3*		6.45 *B3*	4.225 *B3*		5.80 *B3*	6.45 *B3*	5.75 *B3*
	Fairless, Pa.	4.45 *U1*	4.45 *U1*		5.225 *U1*							
	Newark, N. J.			5.85 *W10*		6.80 *W10*						
	Camden, N. J.			5.85 *P10*								
	Bridgeport, Putnam, Conn.	4.55 *N8*		5.95 *W10*	5.225 *N8*			4.475 *N8*				
	Sparrows Pt., Md.		4.30 *B3*					4.225 *B3*		5.80 *B3*	6.45 *B3*	5.85 *B3*
	Palmer, Worcester, Readville, Mansfield, Mass.			5.85 *W11* 5.95 *B5,C14*		6.925 *A5,B5*						6.05 *A5, W6*
MIDDLE WEST	Alton, Ill.	4.50 *L1*										5.925 *L1*
	Ashland, Newport, Ky.							4.225 *A7,N5*		5.80 *N5*		
	Canton-Massillon, Mansfield, Ohio	4.40 *R3*		5.40 *R2,R3*	5.075 *R3,T5*	6.625 *R2,R3, T3*		4.225 *E2*				
	Chicago, Joliet, Ill.	4.30 *U1, N4,W8,R3*	4.30 *N4,R3*	5.40 *A5,W10, W8,B5,L2*	5.075 *U1,R3, W8*	6.625 *A5,W8, W10,L2,B5*		4.225 *U1,W8, I3,A1,R3*	5.275 *U1*	5.80 *U1*	6.45 *U1*	5.75 *A5, R3,N4,W7*
	Cleveland, Ohio	4.30 *R3*	4.30 *R3*	5.40 *A5,C13*		6.625 *A5,C13*	6.45 *R3*	4.225 *J3,R3*	5.275 *J3*		6.45 *J3,R3*	5.75 *A5, C13*
	Detroit, Mich.	4.40 *G3* 4.45 *R5*		5.40 *R5* 5.60 *B5,P8* 5.65 *P5*	5.075 *R5* 5.175 *G3*	6.625 *R5* 6.825 *B5,P5, P8*	6.55 *G3*	4.325 *G3*			6.55 *G3*	
	Duluth, Minn.											5.75 *A5*
	Gary, Ind. Harbor, Crawfordsville	4.30 *I3, U1, Y1*	4.30 *I3, U1, Y1*	5.40 *M5,R3*	5.075 *I3, U1, Y1*	6.625 *M5, R3*	6.45 *U1,I3, Y1*	4.225 *I3, U1,Y1*	5.275 *I3*	5.80 *U1,Y1*	6.45 *U1,I3, Y1*	5.85 *M4*
	Granite City, Ill.							4.425 *G2*				
	Kokomo, Ind.											5.85 *C9*
	Sterling, Ill.	4.40 *N4*	4.40 *N4*									5.85 *N4*
	Niles, Ohio Sharon, Pa.	4.30 *R3*					6.45 *R3*	4.225 *S1,R3*		5.80 *S1*	6.45 *S1*	
	Pittsburgh, Pa. Midland, Pa.	4.30 *J3, U1, C11*	4.30 *J3, U1*	5.40 *A5,C8, C11,J3, W10,B4,R3*	5.075 *U1,C11*	6.625 *A5,C11, W10,C8,R3*	6.45 *J3, U1*	4.225 *J3, U1*	5.275 *U1*	5.80 *U1*	6.45 *J3, U1*	5.75 *A5,J3, P6*
	Portsmouth, Ohio											5.75 *P7*
	Weirton, Wheeling, Follansbee, W. Va.	4.30 *W3*						4.225 *W3, W5*				
	Youngstown, Ohio	4.30 *U1,Y1, C10,R3*	4.30 *U1,Y1, R3*	5.40 *F2,Y1, C10*	5.075 *U1,Y1, C10*	6.625 *Y1,C10* 6.665 *F2*	6.45 *U1,Y1*	4.225 *U1,Y1, R3*		5.80 *Y1*	6.45 *Y1*	5.75 *Y1*
WEST	Emeryville, Cal.	5.05 *J5*	5.05 *J5*									
	Fontana, Cal.	5.00 *K1*	5.00 *K1*		6.125 *K1*		7.70 *K1*	4.875 *K1*		6.45 *K1*	7.15 *K1*	
	Geneva, Utah							4.225 *C7*			6.45 *C7*	
	Kansas City, Mo.	4.55 *S2*	4.55 *S2*		5.325 *S2*		6.70 *S2*					6.00 *S2*
	Los Angeles, Torrance, Cal.	5.00 *B2,C7*	5.00 *B2,C7*	6.85 *R3*	6.125 *B2*		7.15 *B2*					6.70 *B2*
	Minnequa, Colo.	4.75 *C6*	4.75 *C6*					5.075 *C6*				6.00 *C6*
	Portland, Ore.	5.05 *O2*	5.05 *O2*									
	San Francisco, Niles, Pittsburg, Cal.	5.00 *C7,P9* 5.05 *B2*	5.00 *C7,P9* 5.05 *B2*				7.20 *B2*					6.70 *C7*
	Seattle, Wash.	5.05 *B2,P12, N6*	5.05 *B2,P12*				7.20 *B2*	5.125 *B2*		6.70 *B2*	7.35 *B2*	
SOUTH	Atlanta, Ga.	4.50 *A8*	4.50 *A8*									5.95 *A8*
	Fairfield, Ala. City, Birmingham, Ala.	4.30 *T2,C16, R3*	4.30 *T2,C16, R3*				6.45 *T2*	4.225 *T2,R3*			6.45 *T2*	5.75 *R3, T3*
	Houston, Ft. Worth, Lone Star, Tex.	4.55 *S2*	4.55 *S2*		5.325 *S2*		6.70 *S2*	4.55 *L3* 4.275 *S2*		5.85 *S2*	6.50 *S2*	6.00 *S2*

Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angell Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, O.
A8 Atlantic Steel Co., Atlanta, Ga.

B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Pacific Coast Steel Corp., San Francisco
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.

C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C3 Central Iron & Steel Co., Harrisburg, Pa.
C4 Claymont Products Dept., Claymont, Del.
C5 Cold Metal Products Co., Youngstown, O.
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Pittsburgh, Pa.
C11 Crucible Steel Co. of America, New York
C12 Cumberland Steel Co., Cumberland, Md.
C13 Cuyahoga Steel & Wire Co., Cleveland
C14 Compressed Steel Shafting Co., Readville, Mass.
C15 G. O. Carlson, Inc., Thorndale, Pa.
C16 Connors Steel Div., Birmingham

D1 Detroit Steel Corp., Detroit
D2 Detroit Tube & Steel Div., Detroit
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.
D5 Henry Disston & Sons, Inc., Philadelphia

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire Steel Co., Mansfield, O.

F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimmons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G1 Globe Iron Co., Jackson, O.
G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
G4 Greer Steel Co., Dover, O.

H1 Hanna Furnace Corp., Detroit

I2 Ingersoll Steel Div., Chicago
I3 Inland Steel Co., Chicago
I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.

K1 Kaiser Steel Corp., Fontana, Cal.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.

L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid-States Steel & Wire Co., Crawfordsville, Ind.
M5 Monarch Steel Div., Hammond, Ind.
M6 Mystic Iron Works, Everett, Mass.

N1 National Supply Co., Pittsburgh
N2 National Tube Div., Pittsburgh
N3 Niles Rolling Mill Div., Niles, O.
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N5 Newport Steel Corp., Newport, Ky.
N6 Northwest Steel Rolling Mills, Seattle
N7 Newman Crosby Steel Co., Pawtucket, R. I.
N8 Northeastern Steel Corp., Bridgeport, Conn.

O1 Oliver Iron & Steel Co., Pittsburgh
O2 Oregon Steel Mills, Portland

P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Iron & Steel Co., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.
P10 Precision Drawn Steel Co., Camden, N. J.
P11 Production Steel Strip Corp., Detroit
P12 Pacific Steel Rolling Mills, Seattle

R1 Reeves Steel & Mfg. Co., Dover, O.
R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co., John A., Trenton, N. J.
R5 Rotary Electric Steel Co., Detroit
R6 Rodney Metals, Inc., New Bedford, Mass.
R7 Rome Strip Steel Co., Rome, N. Y.

S1 Sharon Steel Corp., Sharon, Pa.
S2 Sheffield Steel Corp., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw & Steel Co., Fitchburg, Mass.
S5 Sweet's Steel Co., Williamsport, Pa.
S6 Standard Forging Corp., Chicago
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Corp., Carnegie, Pa.
S10 Seneca Steel Service, Buffalo

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T6 Tremont Nail Co., Wareham, Mass.
T7 Texas Steel Co., Fort Worth

U1 United States Steel Corp., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.
U3 Ulbrich Stainless Steels, Wallingford, Conn.
U4 U. S. Pipe & Foundry Co., Birmingham

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago
W8 Wisconsin Steel Co., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wycoff Steel Co., Pittsburgh
W11 Worcester Pressed Steel Co., Worcester, Mass.

Y1 Youngstown Sheet & Tube Co., Youngstown

PIPE AND TUBING

Base discounts (pct) f.o.b. mills. Base price about $280 per net ton.

	BUTTWELD														SEAMLESS							
	½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½–3 In.		2 In.		2½ In.		3 In.		3½–4 In.	
	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
STANDARD T. & C.																						
Sparrows Pt. *B3*	21.75	6.5	24.75	10.5	27.25	14.0	29.75	14.75	30.25	15.75	30.75	16.25	32.25	16.0								
Youngstown *R3*	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0								
Fontana *K1*	10.75	+4.5	13.75	+0.5	16.25	3.0	18.75	3.75	19.25	4.75	19.75	5.25	21.25	5.0								
Pittsburgh *J3*	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0	13.5	+1.50	17.5	0.75	20.0	3.25	21.5	4.75
Alton Ill. *L1*	21.75	6.5	24.75	10.5	27.25	14.0	29.75	14.75	30.25	15.75	30.75	16.25	32.25	16.0								
Sharon *M3*	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0								
Fairless *N2*	21.75	6.5	24.75	10.5	27.25	14.0	29.75	14.75	30.25	15.75	30.75	16.25	32.25	16.0								
Pittsburgh *N1*	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0	13.5	+1.50	17.5	0.75	20.0	3.25	21.5	4.75
Wheeling *W5*	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0								
Wheatland *W4*	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0								
Youngstown *Y1*	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0	13.5	+1.50	17.5	0.75	20.0	3.25	21.5	4.75
Indiana Harbor *Y1*	22.75	7.5	25.75	11.5	28.25	15.0	30.75	15.75	31.25	16.75	31.75	17.25	33.25	17.0								
Lorain *N2*	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0	13.5	+1.50	17.5	0.75	20.0	3.25	21.5	4.75
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. *B3*	25.25	11.5	29.25	15.5	31.25	19.0	31.75	17.75	32.25	18.75	32.75	19.25	33.25	18.0								
Youngstown *R3*	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0								
Fairless *N2*	25.25	11.5	29.25	15.5	31.25	19.0	31.75	17.75	32.25	18.75	32.75	19.25	33.25	18.0								
Fontana *K1*	14.25		18.25		20.25		20.75		21.25		21.75		22.25									
Pittsburgh *J3*	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0	14.0		19.0	3.25	21.5	5.75	26.5	10.75
Alton, Ill. *L1*	25.25	11.5	29.25	15.5	31.25	19.0	31.75	17.75	32.25	18.25	32.75	19.25	33.25	18.0								
Sharon *M3*	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.75	35.25	20.0								
Pittsburgh *N1*	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.75	35.25	20.0	14.0		19.0	3.25	21.5	5.75	26.5	10.75
Wheeling *W5*	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.75	35.25	20.0								
Wheatland *W4*	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.75	35.25	20.0								
Youngstown *Y1*	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.75	35.25	20.0	14.0		19.0	3.25	21.5	5.75	26.5	10.75
Indiana Harbor *Y1*	26.25	12.5	30.25	16.5	32.25	20.0	32.75	18.75	33.25	19.75	33.75	20.75	34.25	19.0								
Lorain *N2*	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.75	35.25	20.0	14.0		19.0	3.25	21.5	5.75	26.5	10.75

Threads only, buttweld and seamless 2½ pt higher discount. Plain ends, buttweld and seamless, 3-in. and under, 4½ pt. higher discount. Buttweld jobbers discount, 5 pct.

Galvanized discounts based on zinc price range of over 9¢ to 11¢ incl. per lb, East St. Louis. For each 2¢ change in zinc, discounts vary as follows: ½, ¾ and 1-in., 2 pt.; 1¼, 1½ and 2-in., 1½ pt.; 2½ and 3-in., 1 pt. e.g., zinc price range of over 11¢ to 13¢ would lower discounts; zinc price in range of over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 11.50¢ per lb.

Steel Prices

(Effective Mar. 29, 1955)

To identify producers, see Key on preceding page.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Screw Spikes	Tie Plates	Track Bolts Treated
Bessemer *UI*	4.45	5.35	5.425				
So. Chicago *R3*				7.30			
Ensley *T2*	4.45	5.35					
Fairfield *T2*		5.35		7.30		5.275	
Gary *UI*	4.45	5.35				5.275	
Ind. Harbor *I3*	4.45		5.425	7.30		5.275	
Johnstown *B3*		5.35					
Joliet *UI*		5.35	5.425				
Kansas City *S2*				7.30			11.50
Lackawanna *B3*	4.45	5.35	5.425			5.275	
Minnequa *C6*	4.45	5.85	5.425	7.30		5.275	11.50
Pittsburgh *O1*					11.00		11.50
Pittsburgh *P5*					11.00		11.50
Pittsburgh *J3*				7.30			
Seattle *B2*				7.60		5.425	12.00
Steelton *B3*	4.45		5.425			5.275	
Struthers *Y1*				7.30			
Torrence *C7*						5.425	
Williamsport *S5*		5.35					
Youngstown *R3*				7.30			

ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths)*	Cold-Reduced (Coiled or Cut Length) Semi-Processed	Fully Processed
Field	8.625	8.225	.....
Armature	8.50	8.75	9.25
Elect.	9.10	9.35	9.85
Motor	10.10	10.35	10.85
Dynamo	11.00	11.25	11.75
Trans. 72	11.95	12.20	12.70
Trans. 65	12.50	Grain Oriented	
Trans. 58	13.00	Trans. 80	16.60
Trans. 52	14.00	Trans. 73	17.10

Producing points: Beech Bottom (*W5*); Brackenridge (*A5*); Granite City (*G2*); Indiana Harbor (*I3*); Manefield (*E2*); Newport, Ky. (*N5*); Niles, O. (*N3*); Vandergrift (*UI*); Warren, O. (*R3*); Zanesville (*A7*).

* Coils 75¢ higher.

CLAD STEEL

Stainless-carbon	Plate	Sheet
No. 304, 20 pct.		
Coatesville, Pa., *L4*	*$33.60	
Washington, Pa., *J2*	.....	
Claymont, Del., *C4*	.....	29.75
New Castle, Ind., *I3*	.....	
Nickel-carbon		
10 pct. Coatesville, Pa., *L4*	39.50	
Inconel-carbon		
10 pct., Coatesville, Pa., *L4*	47.90	
Monel-carbon		
10 pct. Coatesville, Pa., *L4*	40.80	

* Includes annealing and pickling, sandblasting.

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard & Coated Nails	Woven Wire Fence 9-15½ ga.	"T" Fence Posts	Single Loop Bale Ties	Galv. Barbed and Twisted Barbless Wire	Merch. Wire Ann'ld ¢/lb.	Merch. Wire* Galv. ¢/lb.
	Col	Col	Col	Col	Col		
Alabama City *R3*	137	146	...	155	150	6.90	7.30
Aliquippa, Pa. *J3*	137	149	...		156	6.90	7.425
Atlanta *A8*	139	151	...	157	164	7.00	7.525
Bartonville *K2*	139	151	...	157	164	7.00	7.55
Buffalo *W6*						6.90	7.30
Chicago, Ill. *N4*	137	149	...	155	162	6.90	7.45
Cleveland *A6*	142						
Cleveland *A5*						6.90	
Crawfordsville *M4*	139	151	...	157	159	7.00	7.55
Donora, Pa. *A5*	137	149	...	155	162	6.90	7.45
Duluth *A5*	137	149	150	155	162	6.90	7.45
Fairfield, Ala. *T2*	137	149	...	155	162	6.90	7.45
Galveston *D4*	139						
Houston *S2*	142	154	...		164	7.15	7.70
Johnstown, Pa. *B3*	137	149	...		162	6.90	7.45
Joliet, Ill. *A5*	137	149	...	155	162	6.90	7.45
Kokomo, Ind. *C9*	139	148	...	157	161	7.00	7.55
Los Angeles *B2*						7.85	
Kansas City *S2*	142	158	...	167	164	7.15	7.90
Minnequa *C6*	142	151	155	160	164	7.15	7.55
Monessen *P6*	137	151	...	...	163	6.90	7.45
Moline, Ill. *R3*			145				
Pittsburg, Cal. *C7*	156	172	...	179	182	7.85	8.40
Portsmouth *P7*						6.90	7.90
Rankin, Pa. *A5*	137	149	...		162	6.90	7.45
So. Chicago *R3*	137	146	145	155	159	6.90	7.30
S. San Francisco *C6*	...	...	...	...	179	...	...
Sparrows Pt. *B3*	139	...	...	157	164	7.00	7.55
Struthers, O. *Y1*	...	...	...	...	...	6.90	7.55
Worcester *A5*	143	...	...	...	...	7.20	.....
Williamsport, Pa. *S5*	...	...	150	...	...	...	.....

Cut Nails, carloads, base $8.30 per keg at Conshohocken, Pa. (*A2*). Galvanized products computed with zinc at 11.0¢ per lb.

WAREHOUSES

Base price, f.o.b. dollars per 100 lb.,

Cities	City Delivery Charge	Sheets: Hot-Rolled	Sheets: Cold-Rolled (15 gage)	Sheets: Galvanized (19 gage)	Strip: Hot-Rolled	Strip: Cold-Rolled	Plates	Shapes: Standard Structural	Bars: Hot-Rolled	Bars: Cold-Finished	Alloy Bars: As rolled A 4615 As rolled	Alloy Bars: Hot-Rolled A 4140 Annealed	Alloy Bars: Cold-Drawn A 4615 As rolled	Alloy Bars: Cold-Drawn A 4140 Annealed
Baltimore	$.20	6.07	7.51	7.64–7.76	6.69	.....	6.37	6.72	6.68	8.02–8.52	12.94	12.54	15.34	15.19
Birmingham	.15	6.35–6.50	7.35–8.10	8.25–9.00	6.69	8.85	6.65	6.65	6.50	8.85	.....	.....	.....	.....
Boston	.10	7.23	8.78	9.52–9.62	7.47	9.65–9.85	7.34–7.37	7.29	7.29	8.60–8.70	12.85–13.00	12.60	15.40	15.25
Buffalo	.25	6.35	7.40	8.00	6.70	7.02	6.65	6.70	6.50	7.40	12.70	12.15–12.40	15.10	14.80
Chicago	.20	6.38	7.38	8.30	6.62	.....	6.52	6.69	6.51	7.25	12.25	12.05	14.60	14.70
Cincinnati	.20	6.49–6.53	7.37–7.42	8.25–8.30	6.86–6.91	.....	6.81–6.86	6.91	6.75–6.80	7.55	12.55	12.35	14.90	15.00
Cleveland	.20	6.38	7.38	8.25	6.72	.....	6.69	7.02	6.57	7.35	11.96	12.11	.....	14.76
Denver	.....	8.15	9.80	10.72	8.40	.....	8.10	8.15	8.30	9.92	.....	.....	.....	17.12
Detroit	.20	6.57	7.57	8.58	6.90	.....	6.80	7.16	6.79	7.54	12.65	12.25	15.05	14.80–14.90
Houston	.20	7.35	7.80	9.93	7.70	.....	7.35	7.60	7.70	9.40	.....	13.25	.....	.....
Kansas City	.20	7.05	8.05	8.97	7.29	.....	7.19–7.39	7.36	7.18	8.02	.....	12.72	.....	.....
Los Angeles	.10	7.50	9.35	9.95	7.85	.....	7.45	7.65	7.55	10.15*	.....	13.45	.....	16.60
Memphis	.10	6.79	7.69	.....	6.90	.....	7.01	7.09	6.88	8.24	.....	.....	.....	.....
Milwaukee	.20	6.47	7.47	8.21–8.39	6.71	.....	6.61	6.86	6.60	7.44	12.34	12.14	14.69	14.79
New Orleans	.15	6.70	7.65	9.23	6.80	.....	6.90–6.95	7.05	6.80	8.70–10.70	.....	.....	.....	.....
New York	.10	6.97–7.07	7.78	8.79[1]–8.99	7.36–7.56	10.15	7.07–7.27	7.13–7.38	7.39–7.37	8.63–8.83[2]	12.63	12.43	.....	15.08
Norfolk	.20	7.00	.....	.....	7.10	.....	7.10	7.10	7.10	8.60	.....	.....	.....	.....
Philadelphia	.10	6.19–6.29	8.00	8.36[4]	7.06	.....	6.59	6.64	6.84	7.86	12.66	12.66	15.06	14.91
Pittsburgh	.20	6.35	7.35	8.30–8.50	6.72–6.75	.....	6.52	6.69	6.51	7.35	12.25	12.05	14.60	14.70
Portland	.20	7.00	7.75	9.05	7.25	.....	6.85	7.00	7.05	10.20–11.70	.....	.....	.....	.....
Salt Lake City	.20	7.65	10.20	10.70	9.05	.....	7.70	7.70–8.85	8.80	10.95	.....	.....	.....	.....
San Francisco	.20	7.55	8.95	9.35–9.85	7.80	.....	7.40	7.50	7.35	10.05*	.....	13.35	.....	16.50
Seattle	.80	8.10	9.80	10.15	8.20	.....	7.80	7.75	7.90	10.95	.....	13.80	.....	16.45
St. Louis	.20	6.62–6.67	7.67	8.54–8.59	6.91	8.13	6.81	7.09	6.80	7.64	12.54	12.34	14.84–14.89	14.99
St. Paul	.20	7.04	8.03–8.39	8.96	7.28	.....	7.18	7.35	7.17	8.01	.....	12.56	.....	15.21

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 9999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanized sheets for quantity.

Exceptions: ([1]) 1500 to 9999 lb. ([2]) 1000 lb or over. ([3]) $.35 delivery. ([4]) 1000 to 1999 lb. $.25 delivery.

* Plus analysis charge.

C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT 0.26–0.40	0.41–0.60	0.61–0.80	0.81–1.05	1.06–1.35
Bridgeport, New Britain, Conn. *N8*	5.75	8.05	9.00	11.15	13.85
Buffalo, N. Y. *R7*	5.75	8.05	9.00	10.95	13.25
Carnegie, Pa. *S9*	.....	8.05	9.00	11.15	13.85
Cleveland *A5*	5.75	8.05	9.00	11.15	13.85
Detroit *D1*	5.85	8.25	9.20	10.95	.....
Detroit *D2*	5.85	8.25	9.20	.....	.....
Harrison, N. J. *C11*	.....	.....	9.30	11.45	14.15
Indianapolis *C5*	6.00	8.20	9.00	11.15	13.85
New Castle, Pa. *B4*	5.75	8.05	9.00	10.95	.....
New Haven, Conn. *D1*	6.20	8.35	9.30	11.25	.....
Pawtucket, R. I. *N7*	6.30	8.35	9.30	11.45	14.15
Riverdale, Ill. *A1*	5.85	8.05	9.00	11.15	13.85
Sharon, Pa. *S1*	5.75	8.05	9.00	11.15	13.85
Trenton *R6*	.....	8.35	9.30	11.25	13.40
Wallingford *W1*	6.20	8.35	9.30	11.45	14.15
Warren, Ohio *T4*	5.75	8.05	9.00	11.15	13.85
Weirton, W. Va. *W3*	5.85	8.05	9.00	10.95	13.25
Worcester, Mass. *A5*	6.00	8.35	9.30	11.45	14.15
Youngstown *C5*	5.85	8.05	9.00	11.15	13.85

BOILER TUBES

$ per 100 ft. carload lots, cut 10 to 24 ft. F.o.b. Mill	Size OD-In.	Size B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
Babcock & Wilcox	2	13	28.33	33.97	27.48	32.95
	2½	12	38.15	45.74	37.00	44.36
	3	12	44.05	52.82	42.72	51.23
	3½	11	51.43	61.66	49.88	59.81
	4	10	68.29	81.88	66.24	79.42
National Tube	2	13	28.33	33.97	27.48	.....
	2½	12	38.15	45.74	37.00	.....
	3	12	44.05	52.82	42.72	.....
	3½	11	51.43	61.66	49.88	.....
	4	10	68.29	81.88	66.24	.....
Pittsburgh Steel	2	13	28.33	33.97	.....	.....
	2½	12	38.15	45.74	.....	.....
	3	12	44.05	52.82	.....	.....
	3½	11	51.43	61.66	.....	.....
	4	10	68.29	81.88	.....	.....

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	per lb
18	4	1	—	—	$1.54
18	4	1	—	5	2.245
18	4	2	—	—	1.705
1.5	4	1.5	8	—	.90
6	4	2	6	—	1.29

High-carbon chromium ..... .73
Oil hardened manganese ..... .405
Special carbon ..... .37
Extra carbon ..... .31
Regular carbon ..... .26

Warehouse prices on and east of Mississippi are 3.5¢ per lb higher. West of Mississippi, 5.5¢ higher.

CAST IRON WATER PIPE

Per Net Ton

6 to 24-in., del'd Chicago $111.80 to $115.30
6 to 24 in., del'd N. Y... 115.00 to 116.00
6 to 24-in., Birmingham 98.00 to 102.50
6-in. and larger f.o.b. cars, San Francisco, Los Angeles, for all rail shipments; rail and water shipments less .....$129.50 to $131.50
Class "A" and gas pipe, $5 extra; 4-in. pipe is $5 a ton above 6-in.

LAKE SUPERIOR ORES

51.50% *Fe; natural content, delivered lower Lake ports. Prices effective for* 1955 *season.*

	Gross Ton
Openhearth lump	$11.25
Old range, bessemer	10.40
Old range, nonbessemer	10.25
Mesabi, bessemer	10.25
Mesabi, nonbessemer	10.10
High phosphorus	10.00

COKE

	Net-Ton
Furnace, beehive (f.o.b. oven) Connellsville, Pa.	$14.25 to $14.50
Foundry, beehive (f.o.b. oven) Connellsville, Pa.	$16.50 to $17.00
Foundry, oven coke	
Buffalo, del'd	$28.08
Chicago, f.o.b.	24.50
Detroit, f.o.b.	25.50
New England, del'd	26.05
Seaboard, N. J., f.o.b.	24.00
Philadelphia, f.o.b.	23.00
Swedeland, Pa., f.o.b.	23.00
Painesville, Ohio, f.o.b.	25.50
Erie, Pa., f.o.b.	25.00
Cleveland, del'd	27.42
Cincinnati, del'd	26.56
St. Paul, f.o.b.	23.75
St. Louis, f.o.b.	26.00
Birmingham, f.o.b.	22.65
Lone Star, Tex., f.o.b.	18.50

ELECTRODES

Cents per lb, f.o.b. plant, threaded, with nipples, unboxed.

GRAPHITE			CARBON*		
Diam. (In.)	Length (In.)	Price	Diam. (In.)	Length (In.)	Price
24	84	22.00	45	110	10.80
20	72	21.25	40	100, 110	9.50
16 to 18	72	21.50	35	110	9.50
14	72	22.00	30	110	9.60
12	72	22.25	24	72 to 84	9.85
8 to 10	60	22.75	20	90	9.65
7	60	23.00	17	72	9.85
6	60	25.50	14	72	10.25
4	40	26.50	10, 12	60	11.10
3	40	30.00	8	60	11.40
2½	30	30.75			
2	24	47.75			

* Prices shown cover carbon nipples.

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)

Machine and Carriage Bolts

	Discount Less Case	C.
½ in. & smaller x 4 in. & shorter	2	22
½ in. & smaller x 6 in. & shorter	+3	18
9/16 in. & ⅝ in. x 6 in. & shorter	+4	17
⅝ in. & larger x 6 in. & shorter	+6	15
All diam. longer than 6 in.	+15	8
½ in. & smaller x 6 in. & shorter	+3	18
Lag, all diam. x 6 in. & shorter	6	25
Lag, all diam. longer than 6 in.	+2	19
Plow bolts	23	23

Nuts, H.P., C.P., reg. & hvy.

	Base Discount	*Discount, Case or Keg*
¾" or smaller	55	64
⅞" to 1¼" inclusive	55	66
1⅜" to 1½" inclusive	60	67½

C.P. Hex. regular & hvy.

All sizes	55	64

Hot Galv. Nuts (all types)

¾" or smaller	38	50
⅞" to 1½" inclusive	41	52½

Finished, Semi-finished, Slotted or Castellated Nuts

All sizes	55	66

Rivets

	Base per 100 lb
½ in. & larger	$9.25
	Pct Off List
7/16 in. and smaller	37

Cap Screws

	Discount Bright	*H.C. Heat Treated*
New std. hex head, packaged ⅝" x 6" and smaller and shorter	38	28
¾", ⅞", 1" x 6" and shorter	15	1
New std. hex head, bulk* 5" x 6" and smaller and shorter	50	42
¾", ⅞", 1" x 6" and shorter	32	21

*Minimum quantity per item:
15,000 pieces ¼", 5/16", ⅜" diam.
5,000 pieces 7/16", ½", 9/16", ⅝" diam.
2,000 pieces ¾", ⅞", 1" diam.

Machine Screws & Stove Bolts

	Discount Mach. Screws	Stove Bolts
Packaged, package list	33	43
Bulk, bulk list		
Quantity		
¼-in. diam. & under: 15,000- 99,999	17	59
¼-in. diam. & under: 100,000-199,999	25	63
¼-in. diam. & under: 200,000 & over	33	67
5/16-in. diam. & larger: 15,000- 49,999	17	59
5/16-in. diam. & larger: 50,000- 99,999	25	63
5/16-in. diam. & larger: 100,000 & over	33	67
All diam. over 3 in. long: 5,000- 49,999	..	59
All diam. over 3 in. long: 50,000- 99,999	..	63
All diam. over 3 in. long: 100,000 & over	..	67

Machine Screw & Stove Bolt Nuts

	Discount Hex	Square
Packaged, package list	30	33
Bulk, bulk list		
Quantity		
⅝-in. diam. & smaller: 15,000- 99,999	15	17
⅝-in. diam. & smaller: 100,000-199,999	23	25
⅝-in. diam. & smaller: 200,000 & over	31	33

REFRACTORIES

Fire Clay Brick

Carloads per 1000

First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add $5.00)	$114.00
No. 1 Ohio	107.00
Sec. quality, Pa., Md., Ky., Mo., Ill.	107.00
No. 2 Ohio	98.00
Ground fire clay, net ton, bulk (except Salina, Pa., add $1.50)	17.00

Silica Brick

Mt. Union, Pa., Ensley, Ala.	$120.00
Childs, Hays, Pa.	125.00
Chicago District	130.00
Western Utah	.....
California	.....
Super Duty Hays, Pa., Athens, Tex., Windham	137.00
Super Duty Curtner, Calif.	155.00
Silica cement, net ton, bulk, Eastern (except Hays, Pa.)	20.00
Silica cement, net ton, bulk, Hays, Pa.	22.00
Silica cement, net ton, bulk, Chicago District, Ensley, Ala.	21.00
Silica cement, net ton, bulk, Utah and Calif.	.....

Chrome Brick

Per net ton

Standard chemically bonded, Balt.	$86.00
Standards chemically bonded, Curtner, Calif.	96.25
Burned, Balt.	80.00

Magnesite Brick

Standard Baltimore	$109.00
Chemically bonded, Baltimore	97.50

Grain Magnesite

Bt. %-in. grains

Domestic, f.o.b. Baltimore in bulk fines removed	$64.40
Domestic, f.o.b. Chewalah, Wash., Luning, Nev. in bulk	38.00
Domestic, f.o.b. Chewalah, Wash., Luning, Nev. in sacks	43.75

Dead Burned Dolomite

Per net ton

F.o.b. bulk, producing points in: Pa., W. Va., Ohio	$14.50
Midwest	15.10
Missouri Valley	13.65

FLUORSPAR

Washed gravel, f.o.b. Rosiclaire, Ill. Price, net ton; effective CaF_2 content.

72½%	$44.00
70% or more	42.50
60% or less	38.00

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 *mesh.*

Swedish sponge iron c.i.f. New York, ocean bags	11.25¢
Canadian sponge iron, Del'd in East	12.0¢
Canadian sponge iron, F.o.b. ship. pt., carloads	9.5¢
Domestic sponge iron, 98+% Fe, carload lots	9.5¢
Electrolytic iron, annealed, 99.5+% Fe	38.0¢
Electrolytic iron, unannealed, minus 325 mesh, 99+% Fe	53.5¢
Hydrogen reduced iron minus 300 mesh, 98+% Fe	63.0¢ to 80.0¢
Carbonyl iron, size 5 to 10 micron, 98%, 00.8+% Fe	82.0¢ to $1.48
Aluminum	31.5¢
Brass, 10 ton lots	29.50¢ to 36.50¢
Copper, electrolytic	49.50¢
Copper, reduced	49.50¢
Cadmium, 100-199 lb. 95¢ plus metal value	
Chromium, electrolytic, 99% min., and quality, del'd	$3.60
Lead	23.50¢
Manganese	57.0¢
Molybdenum, 99%	$2.75
Nickel, unannealed	89.50¢
Nickel, annealed	96.50¢
Nickel, spherical, unannealed	93.50¢
Silicon	43.50¢
Solder powder	7.0¢ to 9.0¢ plus met. value
Stainless steel, 302	91.0¢
Stainless steel, 316	$1.10
Tin	14.04¢ plus metal value
Tungsten, 99% (65 mesh)	$4.05
Zinc, 10 ton lots	17.5¢ to 25.0¢

Ferroalloy Prices

(Effective Mar. 29, 1955)

Ferrochrome

Contract prices, cents per lb contained Cr, lump, bulk, carloads, del'd, 65-72% Cr, 2% max Si.

0.025% C ..	36.00	0.15% C ...	33.75
0.025% C, Simplex ..	34.50	0.50% C ...	32.25
0.06% C ...	34.50	1.00% C ...	33.00
0.10% C ...	34.00	2.00% C ...	32.75
65-69% Cr, 4-9% C			24.75
62-66 Cr, 4-6% C, 6.9% Si			25.60

S. M. Ferrochrome

Contract prices, cents per pound, chromium contained, lump size, delivered.

High carbon type: 60.55% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

Carloads	25.85
Ton lots	28.00
Less ton lots	29.50

High Nitrogen Ferrochrome

Low-carbon type 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 3¢ for each additional 0.25% of N.

Chromium Metal

Contract prices, per lb chromium contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.

0.10 max. C	$1.18
0.50% max. C	1.16
9 to 11% C	1.25

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-49%, C 0.05% max.) Contract price, carloads, f.o.b. Niagara Falls, freight allowed, lump 4-in. x down, 34.75¢ per lb contained Cr plus 12.00¢ per lb contained Si. Bulk 3-in. x down, 25.05¢ per lb contained Cr plus 10.80¢ per lb contained Si. Bulk 1-in. x down, 25.25¢ per lb contained Cr plus 11.00¢ per lb contained Si.

Calcium-Silicon

Contract price per lb of alloy, lump, delivered.

30-33% Cr, 60-65% Si, 3.00 max. Fe.

Carloads	19.00
Ton lots	22.10
Less ton lots	23.60

Calcium-Manganese—Silicon

Contract prices, cents per lb of alloy, lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads	20.00
Ton lots	23.20
Less ton lots	23.30

SMZ

Contract prices, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe ¼ in. x 12 mesh.

Ton lots	17.50
Less ton lots	19.50

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 38-42% Cr, 17-19% Si, 8-11% Mn, packed.

Carload lots	16.60
Ton lots	18.10
Less ton lots	19.35

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload packed	17.50
Ton lots to carload packed	18.50
Less ton lots	20.00

Ferromanganese

Maximum contract base price, f.o.b., lump size, base content 74 to 76 pct Mn:

Producing Point	Cents per-lb
Marietta, Ashtabula, O.; alloy, W. Va.; Sheffield, Ala.; Portland, Ore.	9.50
Clairton, Pa.	9.50
Sheridan, Pa.	9.50
Philo, Ohio	9.50

Add or subtract 0.1¢ for each 1 pct Mn above or below base content.

Briquets, delivered, 66 pct Mn:

Carloads, bulk	11.85
Ton lots packed	13.65

Spiegeleisen

Contract prices, per gross ton, lump, f.o.b. Palmerton, Pa.

Manganese	Silicon	
16 to 19%	3% max.	$84.00
19 to 21%	3% max.	86.00
21 to 23%	3% max.	88.50
23 to 25%	3% max.	91.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.

95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.

Carload, packed	45.00
Ton lots	48.50

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, f.o.b. Marietta, O., delivered, cents per pound.

Carloads	30.00
Ton lots	32.00
250 to 1999 lb	34.00
Premium for hydrogen-removed metal	0.75

Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb of contained Mn ..... 21.35¢

Low-Carb Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd Mn 85-90%.

	Carloads	Ton	Less
0.07% max. C, 0.06% P, 90% Mn	32.00	33.85	35.05
0.07% max. C	29.95	31.80	33.80
0.15% max. C	28.45	30.30	31.50
0.30% max. C	26.95	28.80	30.00
0.50% max. C	26.45	28.30	29.50
0.75% max. C, 80-85% Mn, 5.0-7.0% Si	23.45	25.30	26.50

Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢.

Carload bulk	11.00
Ton lots	12.65
Briquet contract basis carlots, bulk, delivered, per lb of briquet	12.45
Ton lots, packed	14.25

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $85.00 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $88.00. Add $1.00 per ton for each additional 0.50% Si up to and including 17%. Add $1.45 for each 0.50% Mn over 1%.

Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, packed.

	Ton lots	Carloads
96% Si, 2% Fe	20.10	18.00
97% Si, 1% Fe	20.60	18.50

Silicon Briquets

Contract price, cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Si briquets.

Carloads, bulk	6.55
Ton lots	8.35

Electric Ferrosilicon

Contract price, cents per lb contained Si, lump, bulk, carloads, delivered.

25% Si	20.00	75% Si	14.40
50% Si	12.00	85% Si	16.10
65% Si	13.50	90% Si	17.25

Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
Less ton lots	2.40	3.30	4.55

Ferrovanadium

35-55% contract, basis, delivered, per pound, contained V.

Openhearth	$3.00-$3.10
Crucible	3.10- 3.20
High speed steel (Primos)	3.20- 3.25

Alsifer, 20% Al, 40% Si, 40% Fe.

Contract basis, f.o.b. Suspension Bridge, N. Y., per lb.

Carloads	9.25¢
Ton lots	10.15

Calcium molybdate, 46.3-46.6% f.o.b. Langeloth, Pa., per pound contained Mo $1.38

Ferrocolumbium, 50-60%, 2 in. x D contract basis, delivered per pound contained Cb.

Ton lots	$12.00
Less ton lots	12.05

Ferro-tantalum-columbium, 20% Ta, 40% Cb, 0.30% C, contract basis, del'd, ton lots, 2-in. x D per lb cont'd Cb plus Ta.... $6.35

Ferromolybdenum, 55-75%, 200-lb containers, f.o.b. Langeloth, Pa., per pound contained Mo.. $1.46

Ferrophosphorus, electric, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $4.00 unitage, per gross ton $90.00

10 tons to less carload $110.00

Ferrotitanium, 40% regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti $1.35

Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti $1.50

Less ton lots $1.55

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload, per net ton $177.00

Ferrotungsten, ¼ x down, packed, per pound contained W. ton lots, f.o.b. $3.80

Molybdic oxide, briquets, per lb contained Mo, f.o.b. Langeloth, Pa. $1.27

bags, f.o.b. Washington, Pa., Langeloth, Pa. $1.24

Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per lb.

Carload, bulk, lump	15.50¢
Ton lots, packed lump	16.75¢
Less ton lots, lump, packed	17.25¢

Vanadium Pentoxide, 86 - 89% V_2O_5 contract basis, per pound contained V_2O_5 ..... $1.28

Zirconium, contract basis, per lb of alloy.

35-40%, f.o.b. freight allowed, ton lots	26.00¢
12-15%, del'd, lump, bulk-carloads	8.00¢

Boron Agents

Borosil, contract prices per lb of alloy del. f.o.b. Philo, Ohio, freight allowed. B, 314%, Si, 40-45%, per lb contained 2.... $5.25

Bortam, f.o.b. Niagara Falls

Ton lots, per pound	45¢
Less ton lots, per pound	50¢

Corboram, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-3%, C 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed.

Ton lots per pound ..... 10.00¢

Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in., x D, Ton lots... $1.30

F.o.b. Wash., Pa.; 100 lb up

10 to 14% B	.85
14 to 19% B	1.20
19% min. B	1.50

Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over

No. 1	$1.00
No. 6	62¢
No. 79	50¢

Manganese - Boron, 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd.

Ton lots	$1.48
Less ton lots	1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, del'd, less ton lots $2.05

Silcas, contract basis, delivered.

Ton lots ..... 45.00¢

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*Trade Mark

Typical hydraulic cylinder produced by Mullins Koldflo* process. Length 15 inches, I.D. 2¼ inches.

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DIVISION
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Warren, Ohio

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... MEANS SAVINGS ON TUBULAR PRODUCTS

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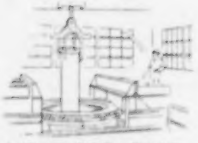
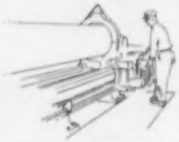


HEAT TREATING

TESTING



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ACIPCO tubes can be furnished in all the alloy grades including abrasive, heat and corrosion resistant stainless steels as well as plain carbon grades. Special non-standard analyses are also available.

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Special Products Division
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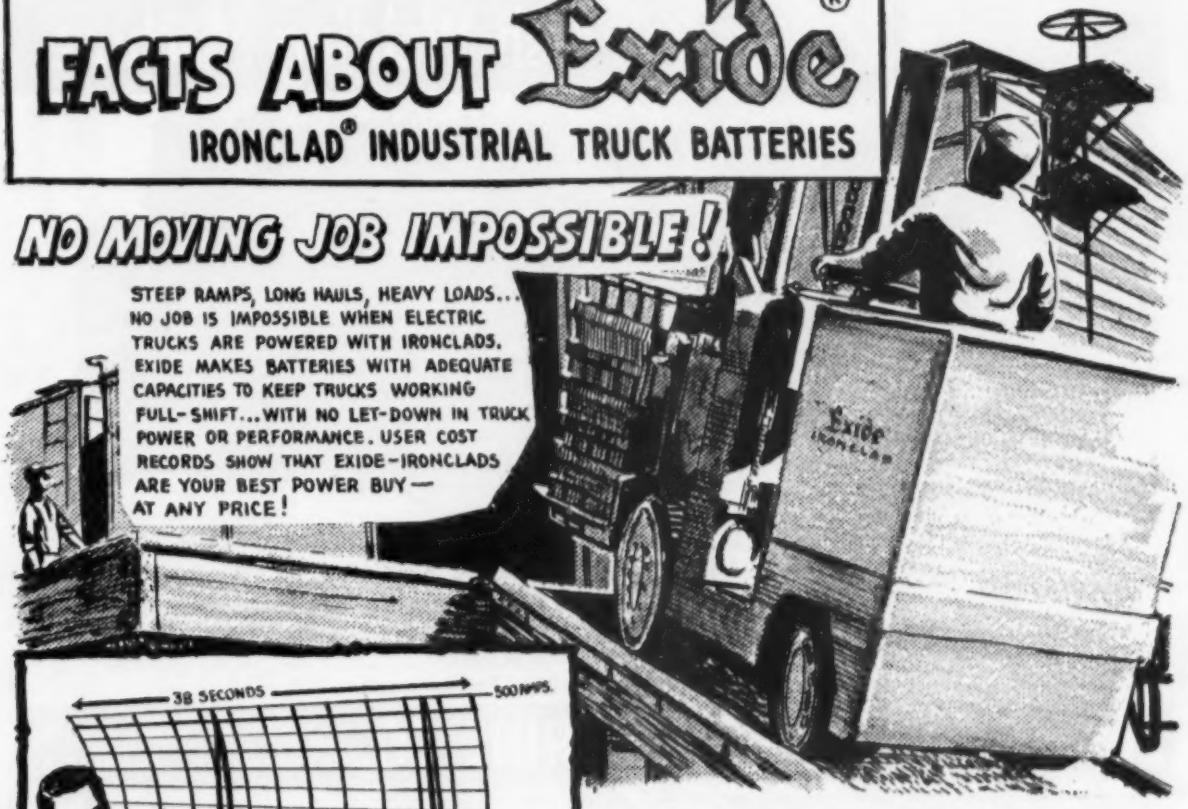

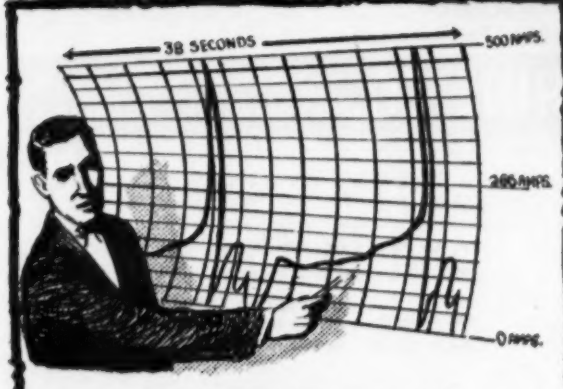

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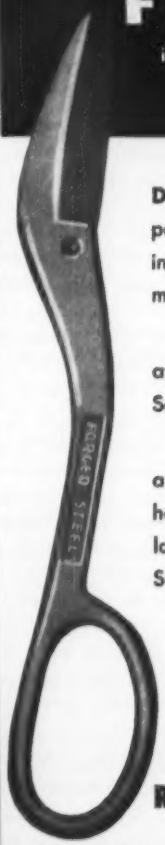

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THE CLEARING HOUSE

News of Used and Rebuilt Machinery

Haze Covers Pittsburgh . . . While reports from machinery rebuilders have not been overly pessimistic, market fluctuations since the first of the year have been so erratic that no one in the trade is too enthusiastic about the future. Certainly the impact of the current strong steel market has had little effect on the sales of used and rebuilt machinery.

Present business is below normal for the majority of rebuilders but they feel the slow March pick-up will continue. Business volume so far in March is slightly up over February but still substantially below January's volume.

Lines Vary Widely . . . The picture is not uniform by any means. Reports vary with different lines from poor to so-so to very favorable. Inquiries are increasing nicely but so far the ratio of sales to inquiries is abnormally low.

One rebuilder of smaller machine tools reports a very favorable business volume without let-up since the first of the year. Inquiries and sales have shown a steady rise without the February slump experienced by most of the trade. On the other hand, heavy machine tools, which were slow during January and February, show little gain in March.

Cranes Move Well . . . Used crane business is developing nicely and is surely brightening the overall picture. Inquiries are particularly good on 5 to 10 ton cranes and sales show a good gain during the first 2 weeks in March. While these smaller cranes were scarce a month ago, their availability has improved considerably today, creating a favorable two-way market.

Monorail hoist activity is also strong, with increased inquiries from small manufacturers. Heavy cranes, 50 tons and over, are starting to come into the picture as inquiries pick up. While not as numerous as for small cranes, inquiries are coming from distant points and for cranes as large as a 200 ton ladle unit.

Steel Mills Inquire . . . Activity for used and rebuilt steel mill machinery is very strong with a flood of inquiries so far in March. Sales ratio to inquiries is low, but is gradually climbing and prospects are promising. As one rebuilder put it, "As long as inquiries keep coming in, we have a basis to do business."

Electrical machinery rebuilders reflect what might be called the average conditions of the rebuilding trade in this area. After starting off strongly in January, they experienced a serious slump in February and are now slowly advancing during March.

It is still too early to guess when the market will take off, but there are certainly many favorable indications that it will do just that. The strength of today's steel market is bound to be felt soon.

Inquiries are already strong from small manufacturers and picking up from the big buyers. The fact that some inquiries are being received far from the district indicates that buyers are shopping or equipment is becoming harder to get or both. In any event, things look brighter.

Army Program Moves . . . Army Ordnance program of machine tool rebuilding is moving forward slowly with 93 machines now slated for placement. Work will be done in lots of 5, 10 and 15 in this opening experimental phase.

James Proctor of Rock Island Arsenal discussed the program at the Mar. 17 meeting of the Machinery Dealers National Assn. in Detroit. Following his address, talk centered on specifications.

General feeling was that the close tolerances the Army now has in mind will have to be eased.

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20' x 1" Hilles & Jones Pyramid Type Bending Roll

BRAKES—LEAF TYPE
8' x ¼" Dreis & Krump Size 186
12' x ⅛" Dreis & Krump, Motor Driven

BRAKES—PRESS TYPE
12' All Steel Press Brake, 250 ton Capacity
Cincinnati All Steel Press Brake 10'x⅜"

CRANES—OVERHEAD ELECTRIC TRAVELING

5 ton P&H Trav-Lift	29' Span	220/440 A.C.
3 ton P&H Trav-Lift	28' Span	440 Volt A.C.
5 ton Toledo	60' Span	230 Volt D.C.
7½ ton Shepard-Niles	32' Span	230/3/60 A.C.
10 ton Shepard-Niles	49' Span	230 Volt D.C.
10 ton Harnischfeger	50' Span	220/3/60 A.C.
15 ton OKT	45' Span	220/3/60 A.C.
15 ton Case	80' Span	230 Volt D.C.
15 ton P&H	97' Span	115 Volt D.C.
With 220/440 AC Generator Set		
25 ton P&H	60' Span	230 Volt D.C.
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30 ton Whiting	60' Span	230 Volt D.C.
50 ton Niles	60' Span	220/3/60 A.C.
125 ton Cleveland	65' Span	220 Volt D.C.
With 2 Trolleys 62½ ton & 10 ton Aux.		

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3 ton Whiting Hydro Arc, Top Charge
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48" x 1½" Mackintosh-Hemphill
80" x ⅝" Pels
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¼" Kling #250, With Flanging Attachment
⅜" Quickwork Circle Shear 18" Throat, Circle Cutting Attachment

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40" No. 16A2 Blanchard 2-spd. rotary, new 1946.
72" Hanchett 3-spd. rotary surface, new 1946.
6" x 18" Landis cyl., 30 deg. 4D, 1941.
16" x 96" Landis gap type cylindrical, new 1941.

LATHES
No. 5 Jones & Lamson ram type univ. turret (2) lats.
14" x 6' Hendey Toolroom, 1940.
12" x 30" Monarch Model C, new 1942.
15" x 30" Lipe Carbo-Matic, 1942.
24" x 48" Monarch Toolroom, 1942.
No. 5 Gisholt, Pre-Selecter, univ., new 1942.

MILLS
1-18, 1-12 & 2-18 Cincinnati production.
1-2-3-4-5-6 knee type plain & vertical.
No. 3B Brown & Sharpe, pl. horiz., 1942.
24" x 24" x 12' Ingersoll adj. rail planer type, 1945.
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No. 2H K & T plain horiz., new 1942.

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Plate Shear, "C", Long and Allstatter, 10'x½".

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1500 Lb., 3300 Lb. Chambersburg Single Leg Steam Forging Hammers.

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Nazel Air Forging Hammers, #4-B, #5-N.

Williams White Bulldozers, #22, #3, #4, #25, #6, #29 U type.

Ajax Forging Rolls, from #1 to #4.

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Specs same as above except machine will handle 60" wide material, new 1940.

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CONVEYOR type will handle coils 44" wide 56" O.D. 20,000 lb. cap. Louis Allis 10 hp adjustable speed AC motor, can feed from 300" to 1200" per min., provided with air cylinder to absorb shock so that coils may be rolled into cradle. New in 1950.

★ **YODER SLITTING LINE**
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18"x12' bed Sidney, m.d., late
18"x14'6" bed Cincinnati, cone, motorized
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19"x16' bed LeBlond Geared Head, m.d.
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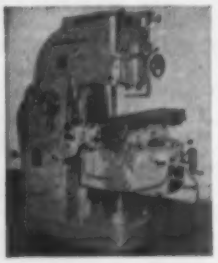

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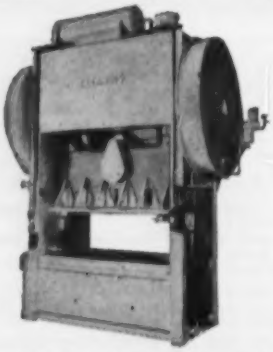

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1	2400	Whse.	720	600	4160/2300
1	1500	G.E.	514	250	13,200/6600
2	1200	Whse.	720	600	2300
1	1000	G.E.	900	250	2300
2	1000	Whse.	514	600	11,000/6600
1	500	C.W.	720	575/600	2300/440
2	500	Whse.	1200	125/250	2300
1	450	C.W.	720	250	2300/440
1	400	C.W.	1200	125/250	2300/440
3	200	G.E.	900	125/250	2300
1	200	Whse.	1200	600	2300/440
1	150	G.E.	720	250	2300/440
1	100	Whse.	900	250	2300
1	100	C.W.	1200	125	440/220
1	300	Whse.	1200	250	4160

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Qu.	H.P.	Make	Type	Volts	R.P.M.
2*	3000	Whse.	Encl.	525	600
1	2000	Whse.	Mill	600	230/460
6	1540	Whse.	Encl.	525	600
1	1200	G.E.	MCF-6	600	350/790
1	800	Whse.	Encl.	525	600
1	800	Whse.	Mill	300	250/550
5	700	Whse.	Encl.	250	300/700
2	500	Whse.	Mill	250	285/710
1	350	G.E.	CD-160-A	230	1150
1	250	G.E.	MPC	230	325/975
1	250	G.E.	MCF	600	300/695
1	200/250	El. Dy.	#22	230	460/1200
1	200	Whse.	Mill	230	300/1200
1	200	G.E.	MDP-420	250	250/410
1	180	G.E.	MPC	250	480
1	150	Whse.	SK-201	230	300/900
2	125	Whse.	SK-184	230	575/850
1	125	Whse.	SK-190	600	600
1	125	G.E.	MPC-6	230	400/800
1	90/160	G.E.	MPC	250	625/1125
4	100	El. Dy.	S-30	250	450/1350
3	75	C.W.	58-H	230	850
1	75	Cont.	D147X	230	425/1275
3	50	Whse.	SK-131.5	230	600/2500
1	40	Whse.	SK-140	230	500/1700
1	40	G.E.	CD-123	230	500/1000
1	35	Whse.	SK	230	250/1000
1	32½	Whse.	SK-150	230	400/1200
3	25	Whse.	SK-93	230	1800

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1	1500	ABB		2300	720
1	1200	G.E.	MT	2300	275
1	1000	A.C.	Mill	2300	240
1	1000	G.E.	MT-452	2300	321
1	500	G.E.	M-574Y	6900	900
1	500	Whse.	CW	550	350
1	450	G.E.	IM	440	720
1	400	Whse.	CW-960A	440	1170
1	400	Whse.	CW	440	514
1	400	Whse.	CW-1213	2200	435
1	350	G.E.	MT-442Y	2300/4000	253
1	350	G.E.	IM-17A	440/2200	720
1	250	G.E.	MT-424Y	4000	257
1	250	G.E.	MT-559S	2200	1800
1	250	Al. Ch.		550	600
1	200	Cr. Wh.	28QB	440	505
1	200	G.E.	IM	440	435
1	200	G.E.	MTP	440	1170
1	150 (unused)	Whse.	CW	2300	435
1	150	G.E.	IM-16	440	600
3	125	A.C.		440	865
1	125	Al. Ch.		440	720
1	125	G.E.	MT-566Y	440/2200	435
1	100	G.E.	IM	440	600
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2	450	Whse.	CS-1420	2300/4150	874
1	300	Whse.	CS	440	1170
1	200	G.E.	IK-17	440	580
3	200	G.E.	KT-557	440	1800
1	150	Whse.	CS-8568	440	880
1	150	Whse.	CS	440	580
1	150/75	G.E.	IK	440/900/605	
2	125	Al. Ch.	ARW	2200	1750

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2	2500	G.E.	TS	2300	257
2	2100	G.E.	ATI	2300	360
2	1750	G.E.	ATI	2300	1660
2	2000	Whse.		2300	120
3	735	G.E.	ATI	2300/12000	600
1	500	Ideal	SM	2300/4160	1800
1	500	Whse.		440	900
1	450	Whse.		2200	128.5
1	450	Whse.		2200	450
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Miller, Vert. #3 Hercules. 1953.
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No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of The City of New York, in the amount of six thousand dollars ($6,000.00), for the proper execution of the Contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained in Room 1317, at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders desiring blueprints of the contract drawings for their own use may secure same, the cost thereof to be paid by them. For further particulars, apply at the office of the Chief Engineer at the above address.

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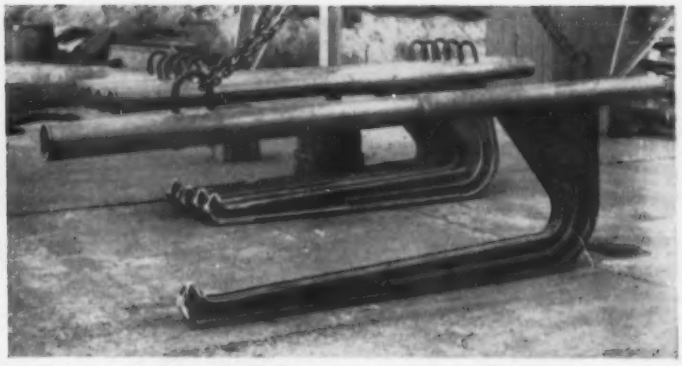

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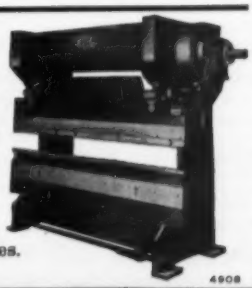

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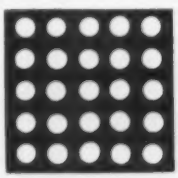

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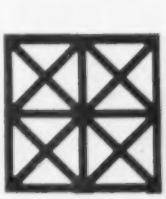

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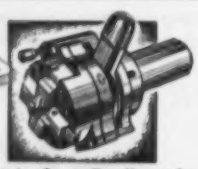

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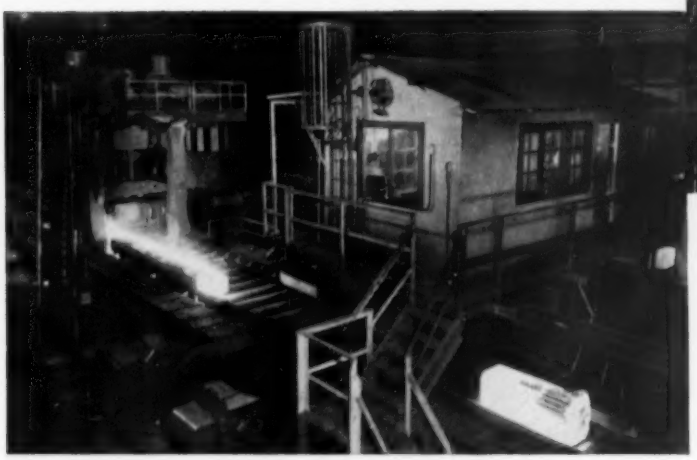

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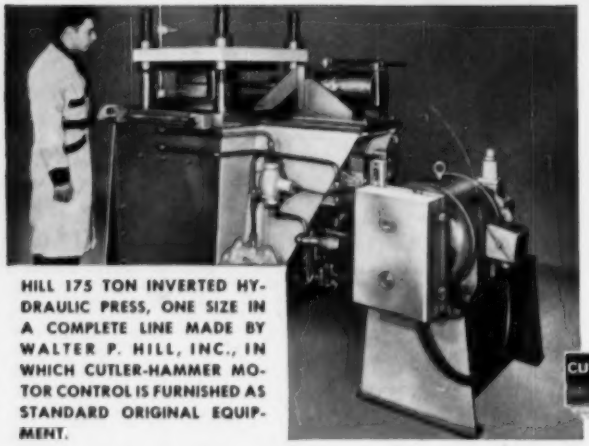

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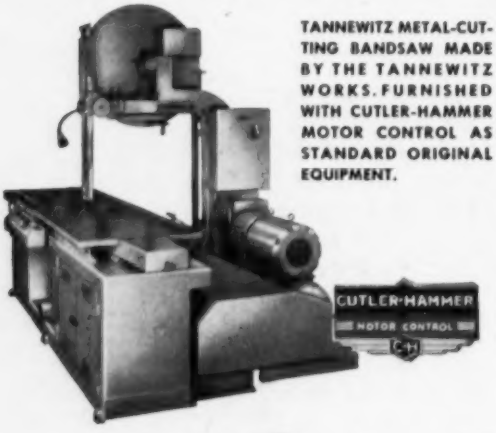

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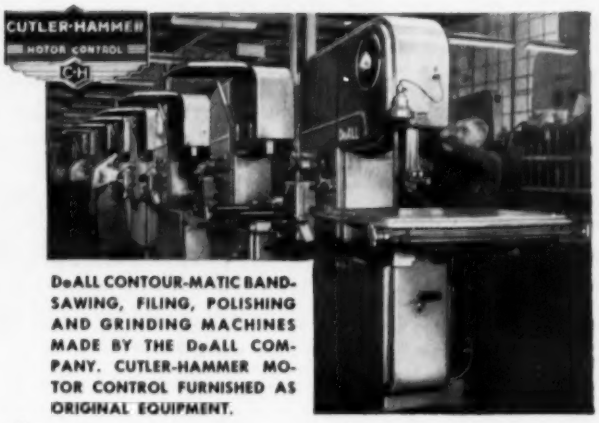

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